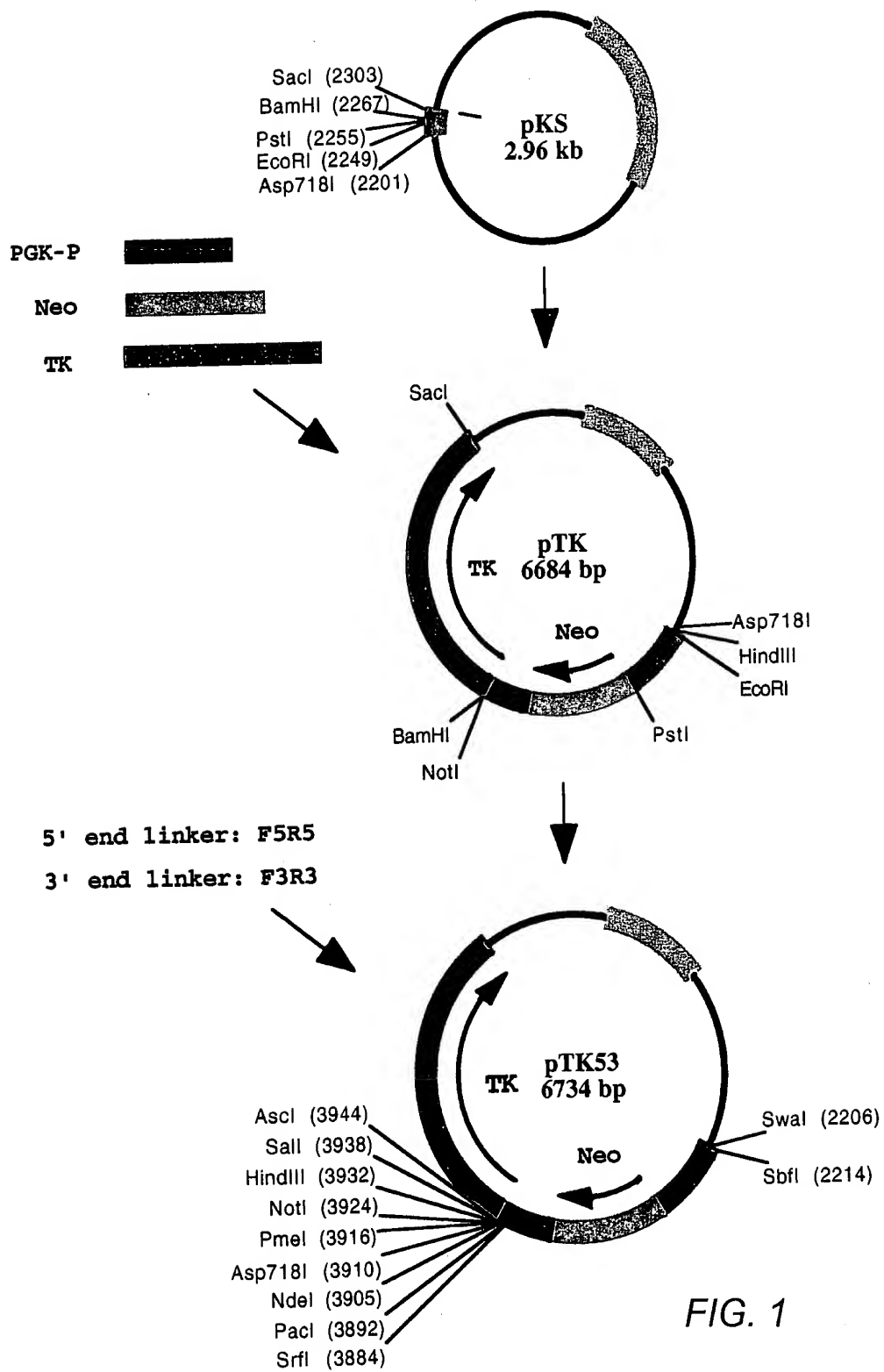


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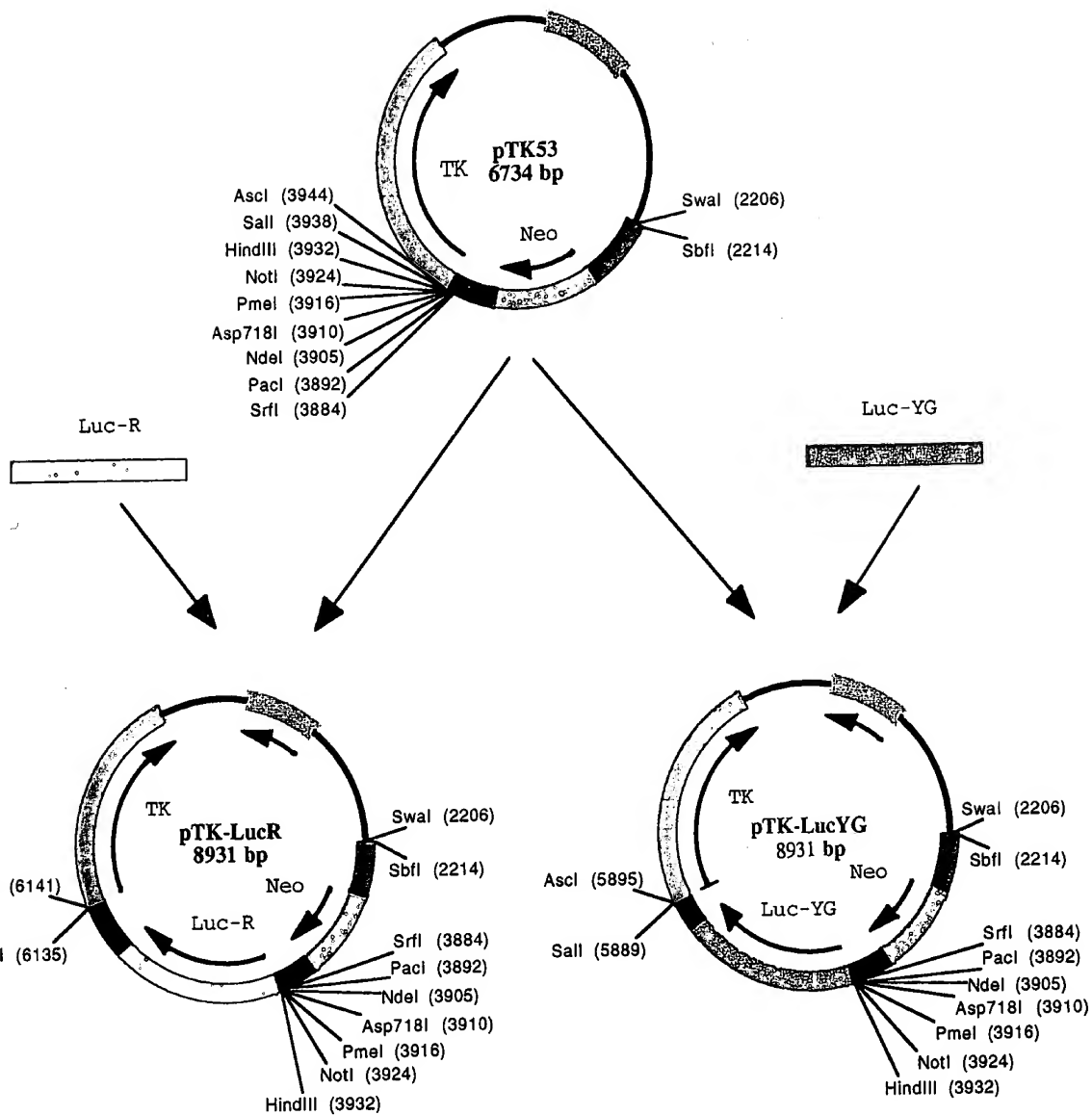


FIG. 2

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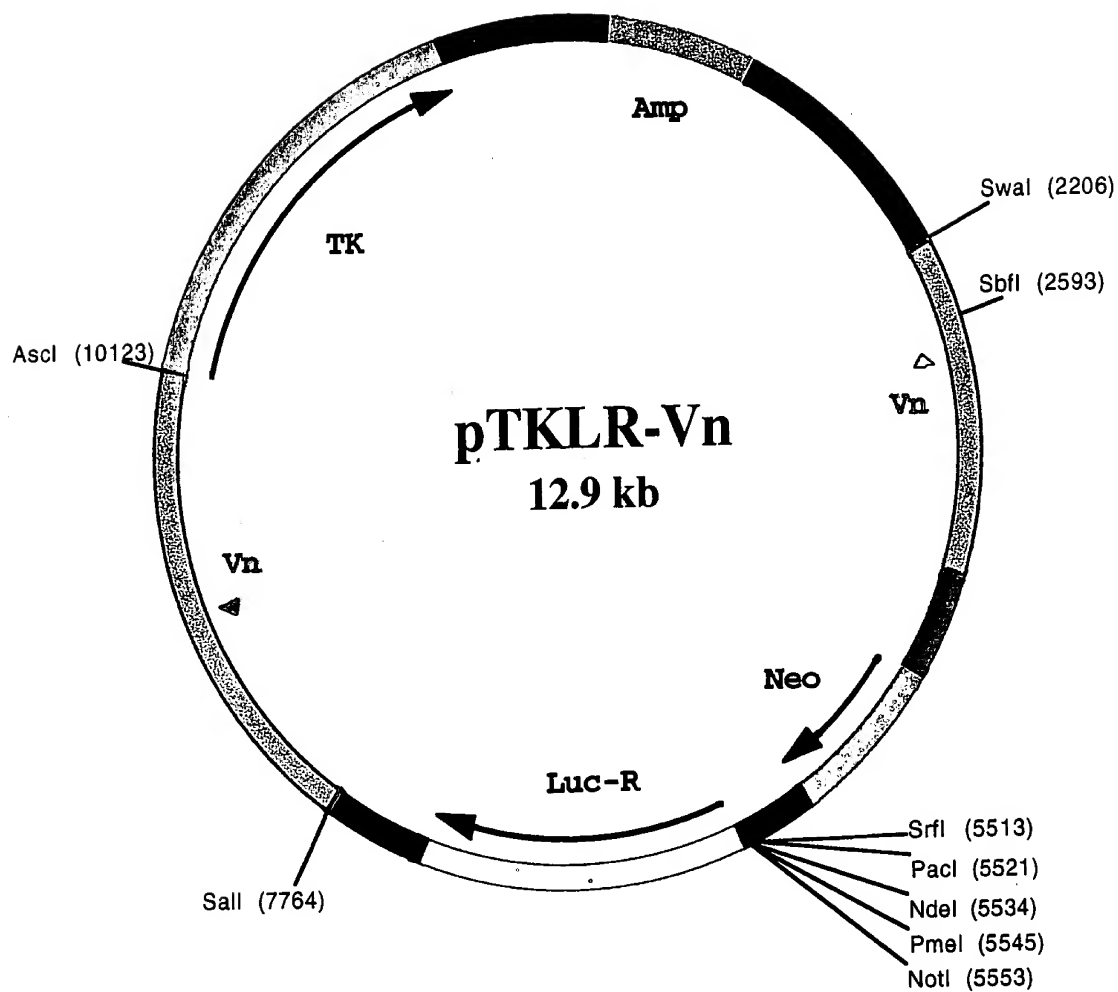


FIG. 3A

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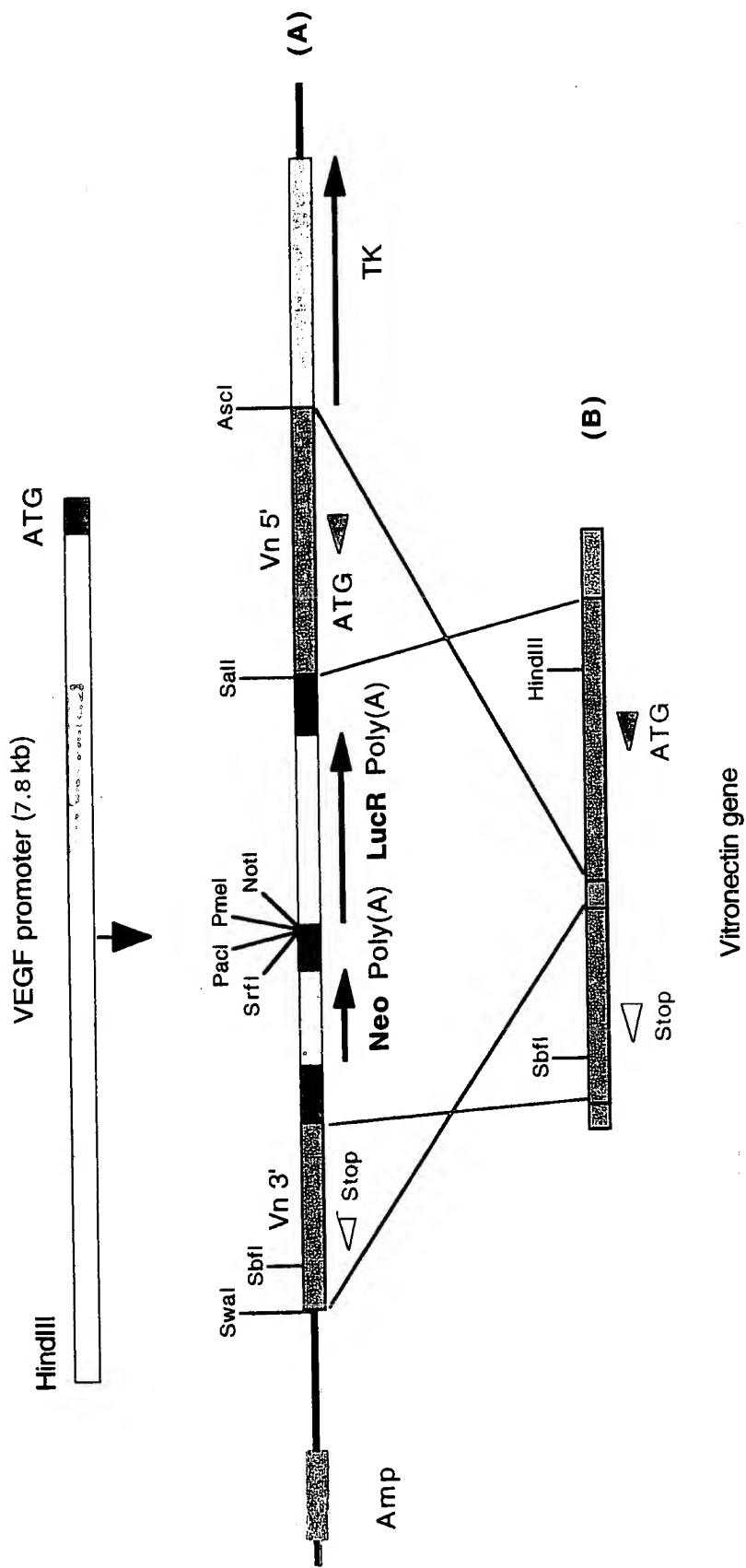


FIG. 3B

1 TOCACCCACC TGTTCCTCAC GTCCCCCGCC TTCCTAGTTA ACTTCATGGT TAAAGAAGCC TCACCCGGGG AGGGTGTGGT GCCACAGAAG GAAGGGTGGT  
AGTGGGTGG ACAAAGAGTG CAGGGGCCGG AAGGATCAAT ATTTCTTCGG AGTGGGCCCC TCCACACCCA CGGTGTCTTC CTTCOCACGA

101 CCCACAAGCC CCCAGTGTCT CTGATTTAGG GAGAGCACCT GAGCCCACTG AGAGTCTTCT CTGTCCCTCA ATCGGTTCCTG AAATTCOCCA CTGGCCCTCC  
GGGTGTTCGG GGGTCACAGA GACTAAATCC CTCTCGTGA CTCGGGTAC GACAGGGAGT TAGCCAAGAC TTTAAGGGGT GAACGGGAGG

201 TTATOCAGGG GACAGGGCTG CCCACCCCTAT TCAGGACAGT AGTCTTAAAC TCGTAGCCAA CAGACTTTT ATTTGGGCTGG GAGAAAGAGA TGAGGCTCCT  
AATAGTTCCT CTGTCCCGAC GGGTGGGATA AGTCCGTGCA TCAGAAATTTG AGCATCGGTT GTCTGAAAAA TAACCCGACC CTCTTTCTCT ACTCCGAGGA

301 GAAGCTCAGC CGAGTGGGCT CTGATTCCCTA CTCTCAGAG GTCCGGCAGC CCAGCCAATA CTGAGCAATG GAGCGTGGGT AGGGAGGATT CACAGAGTCC  
CTTCAGTTCG GCTCACCCGA GACTAAGGAT GAAGAGTCTC CAGCCCGTCG GGTTCGGTTAT GACTCGTTAC CTGCAACCCA TCCCTCTCAA GTGTCTCAGG

401 ACTCCCGGGT TTCTAAGGTT GACTCGGTAG TATTGTGCTG AAAGAAAGAA TGGAAAAAG GTTATGTGAG ATTCTGCCCTG ATCTGTGCTA CTGGTCCCAA  
TGAGCGGGCC AAGATTCCAA CTGAGCCATC ATAAACAGAC TTCTTTCTCT ACCTTTTTC CAATACACTC TAAGACGGAC TAGGACAGGT GACCAGGGTT

501 GAAGGATAAA GGTTCCTTCT CAGAAGGGAA AGTGAACATC CACCAAGCAG ATAATGTAC CATCTACAGG CTGTGTTCAG CACCCAGGGA CCAAGACCTG  
CTTCCTATTT CCGAAAAAGA GTCTTCCCTT TCACCTGTAG GTGTGTCTGCT TATTACAGTG GTAGATGTCC GACACAAGTC GTGGTCCCTT GGTTCCTGAC

601 CAGGCAAGCC CTAGCCAAAA CCAGTCTAAG GAGTAGAAGG GGGCTCCAC CTCAGAGAAA GAAATAGACG CTCTGAATGG GCTCCGAGGT GGCAGGTACA  
GTCCGTTCGG GATCGGTTT GTTCAGATTC CTATCTTCTT CCGGAGGGTG GAGGTCTTCTT GAGGTATGCG CTCTATCTAC CGAGCTTACC CGAGGTGCTA CTGTCCATGT

701 AGCCAGTCCA TATCATAATC ATAGTTGTG TAGGTTCCTA GCCCAGTCTC CTCGCTGGAG AACAAAGAGA ACCAGATTGA ACGTGTATGA CGACGGGAGT  
TCGGTCAAGT ATAGTATTAG TATCAACAAC ATCCAAGGAT CCGGTGAGAG GAGCGACCTC TTGTTCCTCT TGGTCTAAT TGCATCTT CTTGCTCTCA

801 TCGAGCTCTG GCTGCGTCTG TGGCCACGCC CTCGGCGTGA ACGATAGCCG TTTCGGCTTC TACGCTTAGA CTCTGTCTT TTGGCTTGGG CAGAGTGGGA  
AGCTCGAGAC CGACCGAGAC ACCGCTGCGG GAGCCGCACT TGCTATCCGG AAAGCCGAAG ATGCGAATCT GAAGACAAAA AACCCGAACC GTCTCACCTT

901 TAAGGAGCCA GTGACGTAGA TGCGCCCGCC CATAGCAGCG TCCACTTTCC CTGGCACACC ATGCGAGTTC CGGCTGATGA ATTTGGGGTTC TCTGGCTCCA  
ATTCTCTGGT CACTGCATCT ACGCCCGCCG GTATCGTCCG AGGTGAAGG GACCGTGTGG TACGGTCAAG GCGGACTACT TAACCCCAAG AGACCGAGGT

1001 TCTGTACAG GGAAGGGGTT AATGCACTTG GCAGATTCTG GCTTTGATTT CTCCAGCAAG GTTGTCTGTC TATCTATTTA TCTATCTTTA TCTATGTATC  
AGACATTGTC CCTTCCCAA TTACGTGAAC CGTCTAAGAC CGAAACTTAA GAGGTCTGTT CAACAGACAG ATAGATAAAT AGATAGAAAT AGATACATAG

1101 TATCTATATA TCTATGTATC TATCTATCTA TCATCTAOCCT ACCTACTTAC CTATCTATGT ATCTATCTAT CTATCATCTA CCTACCTACT TACCTATCTA  
ATAGATATAT AGATACATAG ATAGATAGAT AGTAGATGGA TGATGTAATG GATAGATACA TAGATAGATA GATAGTAGAT GGATGGATGA ATGATAGAT

1201 CCTATTATT TGTGTGTTTG TTTTCTTTGA AACAGGATCT TAGCACCTAC CTATGGCTGG TTTGCAACTC ACTATGAAGC CATAACTGGC CTCTTAATCT  
GGATAAATAA ACAAACAAC AAAAGAACT TTGTCTTAGA ATCTGGGATG GATACCGACC AAACGTTGAG TGATCTTCG GTATTGACCG GAGAATTGAG

1301 ACAAAGATCC ACTTGCTGT GTCTCTGAGT GCTGGGATTA AAAGCATGTG CCACTACACC CAGCTCCAGT AGGACCTTTA GAACACATTT GCTATGCCTT  
TGTTCCTAGG TGAACGACAC CAGAGACTCA CGACCTAAT TTTCGTACAC GGTGATGTGG GTCCGAGTCA TCCCTGGAAT CTGTGTGATAA CGATACGGAA

1401 GCCTAAGACA CAAACTCAG TCCCAGGCC CCAGCCTCCC TGCTAGAGC TTTTTCCTAT CCTCTCTCCA CTGTATCCCT TGAATCTCTG CCCCACCGA  
CGGATTCCTGT GTGTGTAGTC AGGGTCCGG GGTCCGAGGG ACAGATCTCG AAAAAGGGTA GGAGAGAGGT GACATAGGGA ACTTAGAGAC GGGGTAGGCT

1501 AACCCCTCAG CGCGCAGGCC CTCCCTTCTG TGTGTAGGC AAAGTCCAAG GTATGGGATC CAAATAGAGC CAAGCCTCAT CCCCCAAAAG TCAACAGAAG  
TTGGGGAGTC GCGCGTCGGG GAGGAAGACG ACACAATCCG TTTCAGTTTC CATACCTTAG GTTTATCTCG GTTCGGAGTA GGGGGTTTTC AGTGTCTTTC

1601 CAAAGTCTAG CCAGAGCAAA CAGCTCTTGA TOGATGGTGT CACAGTTCOA GGGCCCTCCC CTGGAAGCCC CCACTATCAC AGCCCAAGTT CCAGAGAAAG  
GTTTCAGATC GTTCTGTGTT AGCTTACCACA GTGTCAAGGT CCGGGAGGG GACCTTCGGG GGTGATAGTG GTCTTCCCAT AGCCCGTAAA GGTCTCTTTC

1701 AAGCCAGCCT TGCTCTCCCT CCATACCAGA GGATCTGCC CAGAAGAGGA GTTCGAAAAT GTTCTCCAG CTGTCCCGCT GAAGCAAGGC AAAGTGTCTA  
TTCCGTTCGA ACGAGAGGGA GGTATGTTCT CCTAGACGGG GTCTTCTCTT CAAGCTTTTA CAAGAGGGTC GACAGGGCGA CTTCGTTCGG TTTCAGAGT

1801 AACACGGCTG ACAGAGAGCT GOCCTGCCAC TOCTCCTGGC TGGGTGTGCT CTGAAATTCG TACTCCAGT ACTGCTTCCC TGAGGAGCAG AACAGCTGGC  
TTGTGCCGAC TGTCTCTGGA CGGAAGCGTG AGGAGGACCG ACCCAACGAC GACTTTTAAGC ATGAGGGTCA TGACGAAGGG ACTCCTCTGTC TTGTGACCG

1901 ATCAGGAGAG ATCTGACCAA GGCAGAGAG AATCATGGAA TAGAACAGGG ACTCCACCAC CTGCCCCCTT CTCTCCACC CTGAGTACCC TTGAAGAAGT  
TAGTCTCTC TAGACTGTGT CCGTCTCTCC TTAGTACCTT ATCTGTGCCC TGAGGTGGTG GACGGGGGAA GAGGAGGTGG GACTCATGGG AACTTCTTCA

2001 AGACCCCTTC CGGCCACTG TAACGGTGGG CAGGAAGGGC GAACGCTGCA TCAACATTGT CTGGTATGCC ACTGAAGCCT TCGGAGATGT TTGGGGATA  
TCTGGGAAAG GGCCTGTGAC ATTGCCACCC GTCTTCCCG CTTCGCACTG AGTGTGTAACA GACCATACCG TACTTCCGA AGCCTCTACA AAGCCCTTAT

2101 ACCAGGGTCC AGGAOCCCAT CCTCAAAAGC CAGTACTGTA CTACCTTGAA AGACAGAGAT CAGAAGGGTG AGGACATACC GCTGGCCACA GAAGCAGTCC  
TGTTCOAGG TCTCGGGTA GGATTTCCG GGTCTGACT CTCTCTCTA GTCTTCCCAT GACCTTCCCG TCCGTATAGG CGACCGGTGT GGTCTCTCAGG

2201 TATATCTTAA ACTGGCTGTC ACCTGCTCCT GGAGTCCCTG ACTGCTTTGT CTTCACAGCT CCGCAGCAG TCCATGGCAC CCTTTACCTT GCCTCAGACT  
ATATAGGATT TGACCGACAG TTGACGAGGA CCTCAGGGAC TGACGAAACA GAAGTGTGCA GGGGTCTGTC AGGTACCGTG GGAATGGAA CGGAGTCTGA

2301 TAGGTCTGTT ACCTTGAACA AGTAGGTCTT CCGCTGACAG TTGATGCGAG TGAAGGCAGC ATCGATGGGG CCCTCAATGC CCCAGACATC TTGATAAGT  
ATCCAGACCA TGAACCTGT TCATCCAGAA GGGGACTGTC AACTACGCTC ACTTCCGTG TAGCTACCCC GGGAGTTAG GGGTCTGTAG AACCTATTCA

2401 TTGGGGTACC CAGGCTCAG TGCCGTCTCA TCTAGCTCAT AGCAGTACTG CCTAGAACAA GGGGAAACTG TGTGAGAAGC AGATGAGCCT AAGGCAGATC  
AACCCCATGG GTCCGGAGTG ACGGCAGAGT AGATCGAGTA TCGTCACTAG GGGATCTTGT CCCCCTTGAC ACACCTCTCG TCTACTCTGA TTCCGTCTAG

2501 CGACCGCCAC CAGACCTGTC CATAGAGTCA CCGCGGAAGG CAAAGAGGGA CCATTTCTTG AGATCCGTGA AGGCGTCAA GGGCTTTCCA CTGCACAGTT  
GCTGGCGGTG GTCTGGACAG GTATCTCAGT GGAGCCTTCC GTTCTCTCCT GGGTAAGAAC TCTAGGCACT TCCGAGTTT CCGCAAGGT CCCGAAAGGT GACGTGTCAA

2601 CTCTCTCTGG AAACCTAGGG GTCCCTTGAT CAGTGGTGTG GGGCCTTAGG ATCTCTCTCT GTTGTCTCAC TTTAGGCGCT GGGGTGCTTG GCTGTCTCTC  
GAGGAGACC TTTGAGTCCC CAGGGAACCTA GTCAACACAG CCGCGAATCT TAGAGGAGGA CAACGAGGTG AAATCCGCGA CCGCAAGGAG GGTCTCTCTC

2701 AGGATCTTAG AAGGCTGTG GCTTTAGAGT GCGCTCCGTC CGAGGATTTA GGTCAACCGG TGGAGAGGTG TTCTCGGGTT GCACACCGGT GTTGGTATTG  
TCTTAGATCC TCCGACAGC CGCAATCTCA GTCTCTAAAT CCAGTGGCCC ACCTCTCCAC AAGAGCCCAA CGTGTGCGCA CAACCTAAC

2801 TTCTTTGGGT CCTCCACGTA GTCATAGCTC CAATAATCAT CCTCTGGCAT AGTGAACAGC TCCCCCGCGG TTAGTGCAGG CAGAACGGGG AGCAGTGAAT  
AAGAACCGGA GGAGGTGCAT CAGTATCGAG GTTATTAGTA GGAGACCGTA TCACTTGTGC AGGGGGCGC AATGACGTCC GTCTTGCCCC TCGTCACTCA

2901 GTCAGGCTGT GGAGGGAGCC CCAGGCCAC CCACAGGGC TCTGAACCTA CCTTGGGGCT TGCACTGCTC CATGTAGTGC GCACAGCAGC TCTGATAGTA  
CAGTCCGACA CCTCCCTCGG GGTCCGGGTG GGTGGTCCCG AGACTTGAAT GGAAACCCGA ACCTGACAG GTACATCAGC CGTGTCTGTC AGACTATCAT

FIG. 3C-1

3001 AGTGCAGGCG TCGTCACACT GACACTT GCTGGCCATG AAACCCCTGAG TGCAGCGGCC CTTGCATC TATGGGAG GGAATATCAG GTTTACAGCC  
TCACGTTTCG AGCAGTGTGA CTGTGAAGAA CGACCGGTAC TTGGGGACTC ACGTCGCGGG GAACGTACTG AGATACCCCT CCTTATAGTC CAAATGTGGG

3101 CAATCTAGGG CACCTGCCCA ACGTGCACCT CCTAGGTAC CCACCAATCC CTTCCACAC CTTGGTCAGC CAGAGAAACC CATGCCACCA GGGCTAGTAT  
GTTAGATCCC GTGGACGGGT TGGACGTGAA GGGATCCATG GGTGGTTAGG GGAGGGTGTG GAACCACTCG GTCTCTTTGG GTACGGTGGT CCGGATCATA

3201 GAAAAAGGGC CTCAGGGGTG CCATGGCAGG CCTCTAGCCC AGGGCCTTGG CAAGCTGGGC GCGGAGCTTC TGGAAATCTCG CTGTCCCTGC TGAAAAAAGA  
CTTTTTCOCG GAGTCCCCAC GGTACCGTCC GGAGATCGGG TCCCGGAACC GTTCGACCCG CCGCTCGAAG ACCTTAGAGC GACAGGACGG ACTTTTTCCT

3301 AGCAGACTGA AGAAGAGTTC CTAGTTCCCT GGTTCCTGCT CTTTATTTTG CTTATCCTCT GGGCAGGCC CATTGCCCTC CTCCAAACAC AGCTGCAGCA  
TOGTCTGACT TCTTCTCAAG GATCAAGGGA CCCAAGACG GGAAATAAAC GAGTAGGAGA CCGGGTCGGG GTAACCGGAG GAGGTTTGTG TCGACGTCTG

3401 AAGGGTCACA TTCCAGAAC CCCAGCCCCA GGAGAGCTGG GAAACAGAAA ACCCTCGCCA AGACCAAAGT CAGTAGGGTC ACGGGCAGGA GGGATAACAC  
TTCCAGTGT AAGGGTCTTG GGTTCGGGGT CCTCTCGACC CTTTGTCTTT TGGGAGCGGT TCTGGTTTCA GTCTACCCAG TCGCCGTCTT CCTATTGTG

3501 GCTTAGCTTA GCTGGGGAGG TGGAAGAAG CATGTGTGT CACCCCTGTA GCCAGTCCCG TTAATCTCCC TGAGCCTTAC TTTTATATAA GTGGGACCAT  
CGAATCGAAT CGACCCCTCC ACCTTCTTTC GTACACAACA GTGGGAGACT CCGTCAGGGC AATTAGAGGG ACTCGGAATG AAAAATATTT CACCCCTGGTA

3601 GGTGCCCTGC CTCATCAGGT GTTGAGAGAT TCCGTGAGCT AGAACAGACA AAACGTTTCG TGCCCTGGAGT AGCTTCCAACT TCATTCCCAT AAGCCGTAT  
CCACGGAAAG GAGTAGTCCA CAATCTCTTA AGGCACCTGA TCTTGTCTGT TTTGCAAAAG ACGGACCTCA TCGAAGGTTG AGTAAGGTTA TTCGGCAATA

3701 CGATTACTAG TTTGATCAGG CTAGGTGCTT GTCCCATCTT ACCCCCGGCT TCGAATCTGG ATTTTGGGG CAAGAAGGGG GGTGGGGGA GAGCTGGCAA  
GCTAAATGAC AAACCTAGTC GATCCACGAA CAGGGTAGGA TGGGGGGGCA AGCTTAGACC TAAAAACCCC GTTCTTCCCT CCAAGCCCTT CTCGACCGTT

3801 GCACCTTGGG GGAGGTTTTC TTTTCTCTTC ATAAAAAGAA AAAGCTTCAT TTCTGGCCTC TCCTGTCTCT CTCTAAGCTG GGTGTACAG CATAGGAAGT  
CGTGAAACCC CTTCCAAAAG AAAAGAGAGG TATTTTCTTG TTTTGAAGTA AAGACCGGAG AGGAACAAGA GAGATTCTGAC CCACAATGTC GTATCTCTCA

3901 AGTGGGTCAG AGTCTATTCT TCTTCTCTTA TTTTCTTAG ATTTATTAT TTTATGTTT GTGTATAAGT GTCTGCTCAC ATGTGCATCT GTGACCCACA  
TCACCAAGTC TCAGATAAGA AGAAGAAAT AAAAAAATC TAAATAAATA AAATACAAAA CACATATTCA CAGACGAGTG TACACGTAGA CACGTGGTGT

4001 TGCACTGCTT GTGTCTATGG AGGTGAGAAG AGGGCTTTGA ATACCTCGGA ACTGGAGTTT TGAACAGTTA TGAGCTGCGC TGTGGATGCT GAGAATCAAA  
ACGTACAGAA CACAGATACC TCCAGTCTTC TCCCGAAACT TATGGGAGCT TGACCTCAAA ACTTGTCAAT ACTCGACGGC ACACCTAGCA CTCTTAGTTC

4101 CCCAGGTCTT CTGTAGAAG AAGTACTCTT AAAGGCTGAG CCATCTTTCC AGTCCACAG CCATTTCCCT AGGCTTTCAC TAATCCATTG ATCCCTGGGG  
GGGTCCAGGA GACATCTTTC TTCTAGAGAA TTTCCGACTC GGTAGAAAGG TCAGGGTCTC GGGTAAGGAC TCCGAAAGTG ATTAGGTAAC TAGGAGCCCC

4201 GACCACCCCT GCCACACCTT CAATGACCTC ATTTATTTTA AAAAAAAT GGACTCATTG GCATACCTTT CTAGACTCAC ATACTAAGTG GGATTTCTCT  
CTGGTGGGAC CGGTGTGGAA GTTACTGGAG TAAATAAAT TTTTCTTTTA CCGTAGTAAC CCGTAGTAAC GATCTGAGTG TATGATTAC CCTAAAGAGA

4301 ATAAAGAAGT GCTCACTGGG GTAGAGTGCC AGGTTTGGG CCAAAATCCA AGCACTGGCA CACTTCTGAA GCGCTCCCTT TTTCTGTCTT GTAATCACAG  
TATTCTTCA CGAGTGACCC CATCTCACGG TCCAAAACCC GGTTTAAGST TCGTAGCGGT GTGAAGACTT CCGGGAGGCA AAAGACAAGA CATTAGTGTG

4401 GCGAGCGTGC CTTTGGTGTG TCTTCTCTAT GGACCGCAGT AGTCTCAGCG GCAAAATGAA ACATAAATTT TTTACTCCCTA CAGACCGGTG AAGCCTAAGT  
CGCTCGCAGC GAAACACAG AGAAGAGATA CCTGGCGTCA TCAGAGTGGC CGTTTACTTT TGTGATTTAA AATGAGGGAT GTCTGCGCAC TTCGGATTCA

4501 GGAAACCGGC ATTAAGAGGC TTTAAGAATC TCAACTGCGA TTCTTTAACC ATCCGGAGGG GAGGTGGATA CATGTAGCCA GCTTGTCTCC ACATTTTGGG  
CCTTTGGCCG TAAATTTCCG AAATCTCTAG AGTTGACGCT AAGAAATTTG TAGGCTTCCC CTGCACCTAT GTACATCGGT CGAACGAAGG TGTAAAAACC

4601 GAGCCGAGCG AGCGGTAGGA AATGGAAGAC AGCTCTTTAC AGCCCTTTCT ACAGCATCTT GCACACCACC AAGGGGAGAC TGGGGAGAGG AGGCGGAGCC  
CTGGCTCGC TCGCATCTCT TTACCTTCTG TCGAGAAATG TCGGGAAAGA TGTCTGAGAA CCGTGTGTGG TTCCCTCTCT ACCCTCTTCC TCCGCTCGG

4701 AGGTGTGGGC GTGGCTGGAG ACGTGGGGTA GGTCTGCGCC TCGGTGCGGG CCGGAGCCCG TGAAACCTAG AGGCGGGGG TCAAACTCTT GACTCTGCTG  
TCCACACCG CACCGACCTC TGGACCCCAT CCGAACGCGG ACGCAGCCCC CGCTCGGGC ACTTTGGATC TCCGCCCCG AGTTTAGGAA CTGAGACGAC

4801 CTCAGAGCGG TGCTTGTCTG TGAGCATCTT AGCTCCGCTG TGCTTAGAAT GGAGCAGCGC TTTGTTCGGG GCACGGCGCT CTCTACCTTC CCGCTCTGG  
GAGTCTCCCG ACCAACGACA ACTCGTAGAA TCGAGGCGAC ACGAATCTAA CCTCGTCGGG AAACAAGGCC CGTGGCCGCA GAGATGGGAG GCGCAGAC

4901 TCCATGCTTC TCTCTCCCTT CATGCCCTTC CTAAGTCGCT GAGTCCCGGA GCTGCCCTCC TCCTTCTGCT TCTACACTTG TAGCCAGCA CCTTTACCGG  
AGGTACGAAG AGAGAGGGA GTACGGGAAG GATTCAGCGA CTCAGGGCTT CGACGGGAGG AGGAAGACGA AGATGTGAAC ATCGGGTCTG GGAATGGCC

FIG. 3C-2

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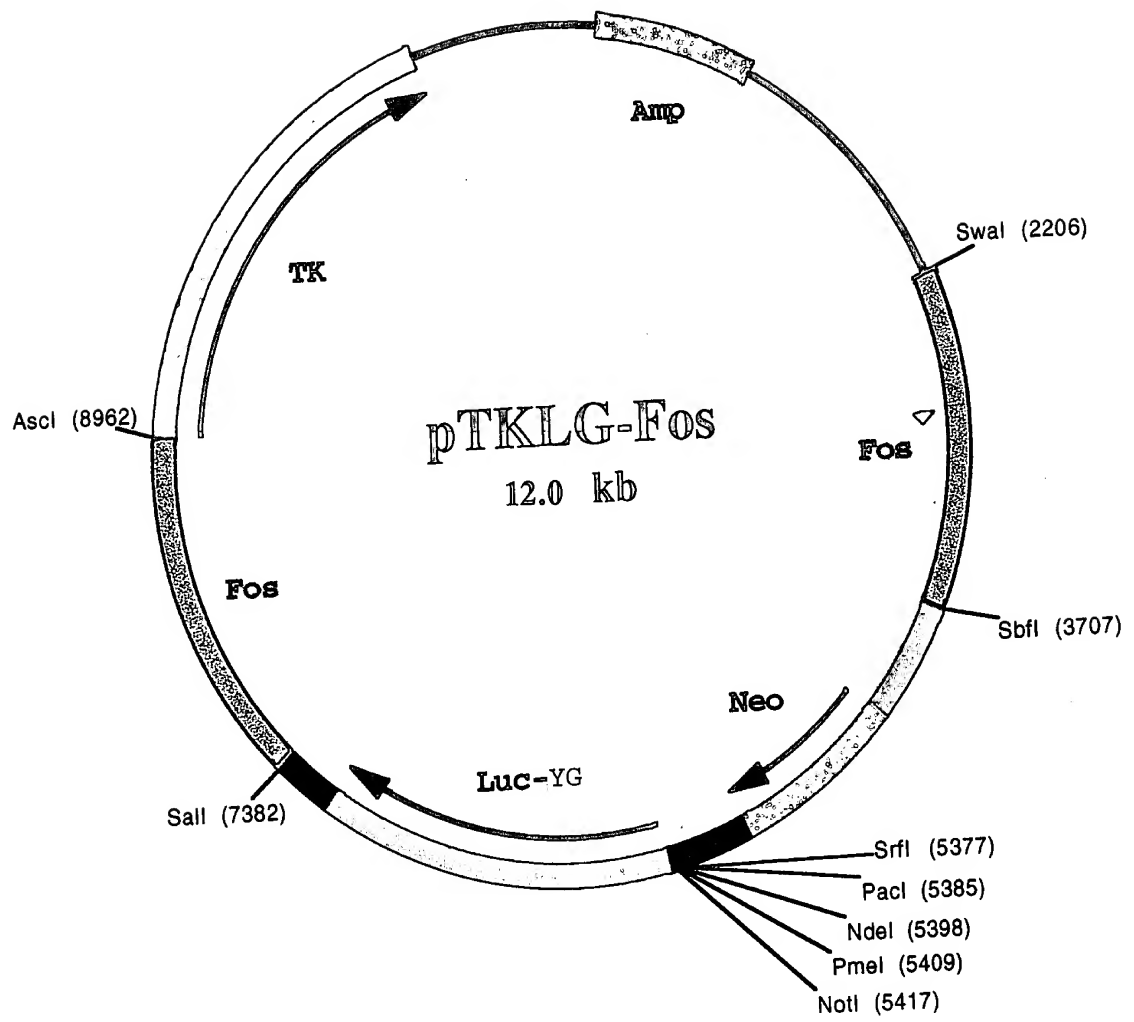


FIG. 4A

1 GCAGCTGGGC AAAGCTTGGC GATGCCGGTG CAAAGTATAT ACCCGTGGT TAGCAGAAGC TGAGAACYTT TAGCCGAAAG COGGCTCCCT AAGCCGAAGC  
CGTCGACCGG TTTCGAAACCG CTACGGCCAC GTTTCATATA TGGGCCACCA ATCGTCTTCG ACTCTTGAAA ATCGGCTTTC GGCCGAGGGA TTGGGCTTGG

101 TAGGCAAGTA GGGGAAGAAA AAAAAAATAA AAATTCAGTA GAAGCTTCCA GAGCCTCCTC CTCTTCCCTC TTCCCTTCAA AGGACTGCAA GTCCCGCAGTC  
ATCCGTTTAT CCCCCTCTTT TTCTTTTTTT TTTAAGGTCT CTTCGAAGGT CTCCGAGGAG GAGAAGGGAG AAGGAAGTTT TOCTGACGTT CAGGCGTCAG

201 ACCCTOCACC CAGCAAGAGT TAGGOCCTCG AACCCCGTTC ACCTCGCTTC GAGCTTCCCTC CGCTTCCCTC CGAACGTAAC GGGGGACCCG TCGTAAGAGC GTGACCGCT  
TGGGAGGTGG GTCTTCTTCA ATCCCGGAGC TTGGGGCCAG TGGACCGGAG CGCGAGGAGC GCTTGCAATTG CCCCCTGGGC ACOCATTTCG CACTGTGGGA

301 GGAATCTCTC GTCTGACCGG GGGCACGCAC AGGCGCGCAG CCGTCCGCCC GCGGCGCCCC TGACGTCCCG GCACGTTCTA TTTTGAAGC CCGAGGCCAC  
CCTTAGGAGG CAGACTGCGC CCGGTGCGTG TCCGGCGTGG TCCGGCGTGG GGGAGCGGGG ACTGCAAGAT AAAAOCITGC GGCTCCGGTG

401 GTTGCTAAGG GAGGGGGCAG CGTGCTTTTG TGATTTGGCTG TCGCGCGCAG CTTTAGCCAA TCAGCTTCCG CTTCCTATTT GTAGAGCGTA GCTCCCTTCC  
CAACGATTCG CTCCCGCTC ACTACCGAAC ACTAACCGAC AGCGCGGTTC GAAATCGGTT AGTCGAAGG GAAGGATAAA CATCTCCGAT CGAGGGAAGG

501 TTGCTTTTTG TGGTCTTTCG CGTGCTGGGG GTCTCCAGA GGAGAGCTAG GATTTCTGTG CGATCGCTC GCGATCCGGG CAGCAACAGT GGGGTACCAAG ACCTCTCTGA  
AACGAAAAAC ACCAAGAAGG GCACGACCCC CAGAGGTTCT CCTCTCGATC CTCTCGATC CTAAAGACAG CGTAGCCCT GAGCAACAGT GGGGTACCAAG ACCTCTCTGA

601 TGTGTGGACC TGGTCTGTGT TCATAAGCTA GAGGCTTTTG GCTGAGTGT AGCGCTCTA AGGGGGAAGT GAAGGCTCA TCCTTCTCAG GCACACATAT  
ACACACCTCG ACACAGACAC AGTATTCGAT CTCCGAAAAC CGACTCACAA TCGCGGAGAT TCCCTCTGA CTTCGAGAGT GTGTGTGATA TGTGTGTATA

701 ACGTGCTCTC GAGCTCTAGA CACTCAGTCC TTCCGAGGTG TTCAAACTC AGATGAGCTA GCGTACGAGT AGGCGCTCA AGGGGGAAGT GAAGGCTCA TCCTTCTCAG GCACACATAT  
TGCAGGAGGA CTGAGAGTCT GTGAGTCCAG AAGGCTCCAC AAGTTTGTGA TCTACTCGAT TCTACTCGAT CCGATGCTC TCCGTCCGTC CACCAGAGAT TTTCAGAGC

801 CTTCCTCTAG TTCCAGGCT CTGATTGGCC AGGATTCAG AGGAGGGAG CCGTCCGCGG CTAGAGTAGT TAAGCCTCTA GGATTCACCT TCGGGGAAGG  
GAAGGGAATC AAGGGTCCGA GACTAACCGG TCCCTAAGTC GGGAGGGAG CCGTCCGCGG GATCTCATCA ATTCCGAGAT CCTAAGGTGA CGAGGGAAGG

901 GGGGGGGGGG GGGCGTGATG GAGCTCTCTT GGGGAGCAG ATCTATATG ACCCATCCG CTGCAAGACA GTCTGAGTGT GGTTCGCTGT CACTTTCTCT  
CCCCCCCCC CCGGCACTAC CTGCGAGAA CCGCTCGCTC TAGGATACAG TGGGTAGGG GACGTTCTGT AAGAGCGACA GTGAAAGAGG

1001 TGCTATCAG TTCACTGAAA CCGTCTCAGT TCAGTGGGAA TCACTGGGAA GAGACAGACA CTGCGAAGGG ATGCTCTCAA CTCTTAGGCC GGTTCGCTGT CACTTTCTCT  
ACGGATAGTC AAGTTCGGA AAGTACCTTT GAGTACCTTT GAGTACCTTT GAGTACCTTT GAGTACCTTT GAGTACCTTT GAGTACCTTT GAGTACCTTT

1101 ACTGGGATCT COGCTCGGG GAGCCTCATC GCAGTGGGGG GTGTGTGTGT GTGTGTGTGT AGAGGAAGCG TTGGCTAAGG CTCTTCCCTC TCCCTCCCTC  
TGACCTTAGA GGGGAGCGCC CTGCGGAGTA CGTCAACCCC ACACACAAC CACTACTACC CACTACTACC CACTACTACC CACTACTACC CACTACTACC

1201 TGTGGTGGGG GTTGGGGGGT TTTGGCTGTA TGTGTGTGTGT TGTGTGTGTGT TGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
ACACACACCC CAACCCCGCA AAACCGCATC ACACACACAC TACAGACAC CAGAGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

1301 CCACCCCCCC ACACCTAAGA GTCAACCAAC CCGGGTGTGA TTCAACCAAC GCTGGAACCG TGCAACCTTT ACCTTGGAAA GGGGCTCCTT CTCTCTCTCT  
GGTGGGGGGG TGTGATTTCT CAGTGGTGTG GCGCCCACTA AAGTGGTGTG GGTGTGTGTG GGTGTGTGTG GGTGTGTGTG GGTGTGTGTG

1401 GTTGAACAGA ATCTCTCATT AACCACTGGG TCAAGGTGTG AGTGGCCAT CACTTCCCA CAGCACAAC CAGCACAAC CAGCACAAC CAGCACAAC  
CAACTTGTCT TAGAGAGTAA TTGTGACGCT TGTGTGTGTG GGTGTGTGTG GGTGTGTGTG GGTGTGTGTG GGTGTGTGTG GGTGTGTGTG

1501 TGTGCTCACT CACAGGGTGG GTCTCTCTTA TCTCTCTTGG GCGTGTGTGT GTGCGTGGCT TGTGTGTGTGT TGTGTGTGTGT TGTGTGTGTGT  
ACACGAGTGA GTGTCCAGC CAGAGAGAT AGAGAGAACC CGCAGTGTGT GTGCGTGGCT TGTGTGTGTGT TGTGTGTGTGT TGTGTGTGTGT

1601 GTAGGAGTGC GCGGCTCTCG GGGAAATGCC CGCTCTCTTC CAGCTCTCTC GTGCGAAGG TCAACCGAAT CACAACCCAG CAGGATCTTC AGTGGCTGTG GCAACCCAG  
CATCTCTACG CCGCCAGAGG CCGTTTACGG GCGGAGGAG CAAGTGTGCC AGTGGCTGTG GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT

1701 CTCATCTCTT CCAATGGCCA GTCCAGGGG CAGCCTATGG CCTCCAGCC TCCAGCTGT TCCAGCTGT TCCAGCTGT TCCAGCTGT TCCAGCTGT  
GAGTAGAGAA GGTACCGGGT CAGGGTCCCC GTGCGTGACC GAGGGTCCG AGGTGTCCG AGGTGTCCG AGGTGTCCG AGGTGTCCG

1801 GCGTGTGTGT CTACGAGCT GCGGGGGCAA GCGCCCGGTT GCGGGCTTCA ACCAGCACA TGGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
CGGACTACG GATGTGTGTA CCGCTTACGG GCGCTTCAAC ACCCGAAGT TGGTGTGTGT TGGTGTGTGT TGGTGTGTGT TGGTGTGTGT

1901 GCTTAGAAGA CCGCGAGAAG AGACAGTAAG TATGAGGCT CAGGAGTGTG GATGAGGAG CCGTGTGTGT CCGTGTGTGT CCGTGTGTGT  
CGGATCTTCT GGGGCTCTTC TCTGTCTATC ATACTCCGGA GTCTCTCAAC CTACCTCTCT CCGTGTGTGT CCGTGTGTGT CCGTGTGTGT

2001 TGCCATGTAT GAAGATCCCT AGCAGAGCAT AAGCCAGGAG TGGTGTGTGTA TTTGGTCTCT CAAGAGATCA TTTATTTCAA AAGTGTGTGT TGGTGTGTGT  
ACGGTACGTA CTCTTAGGGA TCTGTCTGTA TTCCGTCTCT GATCTCAAC CAGTGTGTGT GATGTGTGTGT GATGTGTGTGT GATGTGTGTGT

2101 GAGGCCAGCC TGTGCTACTT ATGAGTCCA GCGTCTCTCT CAAGAGATCA TTTATTTCAA AAGTGTGTGT TGGTGTGTGT TGGTGTGTGT  
CTCCGCTGGG ACACAGTAA TACCTCAGT CCGAGGTGAC GTCTCTCTCT ATTAAGAGTT TTCAACCGGA ACCCCCCCTC ACCCACTCCC TTCACTTCTCT

2201 AAGTGTAGT AATTTTGTCA CTAAATAGTT AGGGCTGATA GAGGTACCCC CAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
TTCACTGTCA TTAAGACAGT GAATTTATCAA CCTCCAAGGA GACTCCGAG TTTCACTCTC AAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2301 TTTGGGGTTC AGGAGGAAGG AAGTGTCTTT AGGGCTGATA GAGGTACCCC CAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
AAACCCCAAG TCCCTCTTCC TTCAAGAGAA TCCCGACTAT CTCCATGGGG CAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2401 AAAGCGAAGG GTTCGAGAG AGCGGAACAA GCTGGCTGCA GCTAAGTGA CAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
TTTCGCTTTC CAAGGCTCTC TCGCTTGTG ACTCTGCTCT GTCTCTTCCC CGTTTCTCAC TGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2501 CTGGGGGGTCT CTTGAGGCGG TGCTGGGAGC ACTCTGCTCT GTCTCTTCCC CGTTTCTCAC TGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
GACCCCCACA GAACCTCCGG ACGACCTCG TGAGACGGAA CAAGAGGGG GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2601 CAGGGGTGAG TATAGGCTGA TGGAGTGGCT CCATATGCAT GCTCAGACC CGAGTCTGGG ATGCGCACTT ACTTTCGACT GTTCCCACTT TTCCCTGAAT ATGTCCCCAC  
GTCCCGATG ATATCCGACT ACCTCACCGA GGTATACGTA CGAGTCTGGG TACGGGTGAA TGAAGGCTGA CAGGGGTGA AAGGGACTTA TACAGGGGTG

2701 ATGTCAACCT CCGGCTTTC TCTCAGCCTA AGGAGACAAG CTAGAGGAGG TAATTTCTCT ACCTTCTTCT TCGAAGAAAA GAAGTGAATT ATTATTAGT AAAACGGAG  
TACAGTGGGA GACCCGAAAG AGAGTCGGAT TCCCTGTGTT GATCTCTCTC ATTAAGAGAG GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2801 CTGCTTCCAT TTTTPTTTC TGAGCTGGGG ATCTACCTGT CGTGTCTCAG CCGTGTCTCT CCGTGTCTCT CCGTGTCTCT CCGTGTCTCT CCGTGTCTCT  
GACGGAGTGA AAAAAAAGG ACTCGACCCC TAGATTGGCA GCATCAAGTC GGGAGGAGGG GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

2901 CCATCATCTT GACTGGCTCT GGCTGGAAC TATTTTGTGC TAAGTCAATT CCGTGTCTCT TACTTCACTT TACTTCACTT TACTTCACTT TACTTCACTT  
GGTAGTAGGA CTGACCGAGA CCGACCTTTG ATTAACACAG ATTCAAGTAA GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

3001 GCGGCCACCA AGCCCACTTC TTCTCTCTTT TTTTACCTCA GTGCAACCCC CACGTTGGGG GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
CGCGGTGGT TCGGGTGAAG AAGAGAGAA AAAATGGAGT CATTAAACAC AACACATAAG CATTTACCTAC TGAATGGAGT ACTGAGTGTG TTTTCTTTT

3101 CTCCCGCTGC GAGGGCTGAA GGAGATGGGT AACGAACTT CATTAAACAC AACACATAAG CATTTACCTAC TGAATGGAGT ACTGAGTGTG TTTTCTTTT  
GAGGGCGAGC CCGCGACTT CCGTCAACCA TTGTCTTGA GATTAATTTT TTTGTATTTC GAGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

3201 TTCTCTTCAA AAAATTTTTC CGTTTGTGTA TTTATTTAT TTTATTTAT TTTATTTAT TTTATTTAT TTTATTTAT TTTATTTAT  
AAGGAGAGTT TTTTATAA GCAAAACAA ATTAATAA CAAATTAATAA CAAATTAATAA CAAATTAATAA CAAATTAATAA CAAATTAATAA

3301 TCATAGTTTG TTCTCTCTCT CCGTGTGTGT GGTGTCTGCT GCATCAAGTC GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT  
AGTATCAAC AAGAGAGAA GGCACACAC CCGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT GGTGTGTGTGT

3401 CCTTAGTACA GGGGACCCCT TTCTCGGCC TCTCAAAGT GAGATTACAA ATGTTCACCA TCACACCAGG CTTGGAGTTC TTGCTATCA GTGAGTCCA  
GGAATCATGT CCCCCGGGA AAGGAGCCGG AGAGTTTCAA CTCTAATGTT TACAAGTGT AGTGTGTGTG GAACCTCAAG AACGATAGT CACTGTCAAGT

3501 CTCTGCTCTA GCTTCTTCCC AACCATCTTT TAGTCTGATG GGGAAACGGA GCGAAGGTA GCATGTGTCT CAGAGATTTT CTCTTAGGGG ACGGTCCCTT  
GAGGACGGAT CGAAGAGGG TTGGTAGAAA ATCAGACTAC CCGTGTGTGT CCGTGTGTGT CCGTGTGTGT CCGTGTGTGT

FIG. 4B-1



3601 CAGTGGGAG GGAGCTGTCC AGCCCCG ATCAGCAGCA AGAATGTATG AGTGTGGGGT TGGGGGAG AGCTACTCT GTGTGGTCCG TGACCAGCAA  
GTCAACCCCTC CCTCGACAGG TGGGGGGACC TAGTCGTCTG TCTTACATAC TCACACCCCA ACCCGCCAC TTCGATGAGA CACACAGCG ACTGGTCTGT

3701 TTCTCTCTTC TCTGTCTCT ATGACCTGGC CCTGTCTGGG TCCATTAGGA AACTGATCAG CTGGAAGAGG AAAAGGCAGA GCTGGAGTCG GAGATCGCCG  
AAGAGGAAAG AGACAGAGGA TACTGGACCG AGGTAACTCT AGGTAACTCT GAACTTCTCC TTTTCCGTCT CGACCTCAGC CTCTAGCGGC

3801 AGCTGCAAAA AGAGAAGGAA CGCTGGAGT TTGTCTGTGT GCCCCACAAA CCGGCTGCA AGATCCCTTA CGAAGAGGGG CCGGGGCGAG GCGCGTGGC  
TCGACGTCTT TCTCTCTCTT GGGGACCTCA AACAGGACCA CCGGGTGTGT GCGCCGACGT TCTAGGGGAT GCTTCTCCCG GCGCCCGGTC CGGGCGACCG

3901 CGAGGTGAGA GATTGTCCAG GGTCAACATC CGCTAAGGAA GACGGCTTCG GCTGGCTGCT GCGCCCGCTT CCACCACCGC CCCTGCCCTT CCAGACAGC  
GCTCCACTCT CTAACCGGTC CCAGTTGTAG GOGATTCCTT GOGATTCCTT GCGACGACGA CGCGGGGGG GGTGTGGG GGGACGGAA GGTCTGTCTG

4001 CGAGACGCAC CCCCCAACCT GACGGCTTCT CTCTTTACAC ACAGTGAAGT TCAAGTCTCT GCGCACCCCT TCCCCGTGTG TAGCCCTTCG TACACTTCCT  
GCTCTCGGTG GGGGGTGTGA CTGCGAAGA GAGAAATGTG TGTCACITCA AGTTACAGGAG CCGCTGGGGA AGGGGCAACA ATCGGGAAGC ATGTGAAGGA

4101 CGTTTGTCTT CACTGTCCCG GAGGTCTCCG CGTGTGCGCG CGCCCAACGC ACCAGCGGCA GCGAGCAGCC GTCCGACCGC CTGAACTCGC CCTCCCTTCT  
GCAACACGGA GTGACCGGGC CTCAGAGGC GCAAGCGGCG GCGGGTTCGG TGGTGTCCGT GCGACGACGA CGCTCTCGG CAGGCTGGGC GACTTGTAGC GAGGGAAGGA

4201 TGCTCTGTAA ACTCTTTAGA CAAACAAACC AAACAAACC CGTCTCTGTG TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT  
ACGAGACATT TGAGAAATCT GTTTGTTTTG TTTGTTTTGG CGTCTCTGTG TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT TCTCTCTCTT

4301 GTGTGGAACC TTGTGACTCT CTGTCTGACC AACTGTCCGC TCTGCCATCG GACATGACGG AAGGACCTCC TTTGTGTCTT GTGCTCTGTC TCTGGTCTTC  
CACACCTGGG AAACGTAGAA GACAGACTGG TGACCGGGCG AGACGCTGCG CTGTACTGCC TTTCTGGAGG TTTCTCTGAG TTTCTCTGTC TCTGGTCTTC

4401 TGTGCCCGCG CGAGACCGGA GAGCTGTGGA CTTTGGGGAG AGGGGGTGGG GCGGGGATGA ACACCCCTCC TGCAATCTTT TGTCTCTGTA CTTCACCCCA  
ACACGGGGCC GCTCTGGCCT CTGACCACT GAAACCCCTG TCCCCACCC CGCCCTACT TGTGGGGAGG ACGTATAGAA ACAGACAAT GAAGTGTGGT

4501 ACTTCTGGGG ATAGATGCTT GACTGGGTGG GTAGGGTGGG GTGCAACGCC CACTTTTGGC GTCTTACGTG AGGCTGGAGG GGAAGAGTGT CTGAGTGTGG  
TGAAGACCCC TATCTACCGA CTGACCCACC CATCCACCC CAGCTTGGCG GTGGAACCG GTGGAACCG CAGAAATGCAC TCCGACCTCC CTTTCTCAGC GAGGGAAGG

4601 GGTGCAAGGT GGGTGTAGGT CGAGCTGGCA TGCACTCCCA AGAGGAGTCA ACAGGAGAAAT GACAGCACCG TCTGTCTCTT CTTTTCCTCC ACCCAACCAT  
CCACGTCCCA CCAACTCCCA ACGTGGAGGT CTCTCTGGGT TGCTCTCTTA CTGTCTGTC AGGACAGGAA GTTAAAGGTT TGTAAAGGTT TGTAAAGGTT

4701 CCACCTCAA GGTGTGAGG TGACCAAGAT AGCTCTGTCT TGCTCTCTCT GGCCTTAGCT GATTAACTTA ACATTTCCAA GAGGTTCACAA CCTCTCTCTG  
GGTGGGAGTT CCCACGTCC ACTGTTCTTA TCGAGACAAA ACGAGGGAGC CCGGAATCGA CTAATTTGAA TGTAAAGGTT TGTAAAGGTT TGTAAAGGTT

4801 CAGGAATTGA GCGCCGAGT GAGGGAAGTC GATGCGCCCT GTGCGGGGA CTTTGGAGTCT GTTAAAGGTT TGTAAAGGTT TGTAAAGGTT TGTAAAGGTT  
CTGCTTAACT CCGGGGCTGA CTCCCTTCAG CTACGGGGGA AACCCTCAGA CGATTGGGGT GAAGGGCGAC TAAGGTCTTA TGTAAAGGTT TGTAAAGGTT

4901 TCAGTCTTTC CCTCTGGGA AAACCTGGCT AGGTGTGGAT TTTTCTCTCG TCTGTCTACAG AGCCCTCTCC CAACCTCAGC CCGCTCCAC CCTGTGTGAG  
AGTCAGAAAG GGAGGACCTT TTTGACCGAG TCCAACCTAA AAAAAGGAGC AGACGATGTC TCGGGGAGG GTTGTGTCG GCGGACGGTG GCGGACGGTG

5001 TATTATGCTA TGTCTCTCT ACCCTCACCC CCACCCAGG CGCCCTTGGC GCGGGGACCG CGGGGAGTGG GCGGGGAGTGG GCGGGGAGTGG GCGGGGAGTGG  
TATTATGCTA TGTCTCTCT ACCCTCACCC CCACCCAGG CGCCCTTGGC GCGGGGACCG CGGGGAGTGG GCGGGGAGTGG GCGGGGAGTGG GCGGGGAGTGG

5101 CCACTCTGCT GGAGCGCTTT ATACTGTGAA TGAGTGGTCT GATTGTCTGG CGCGCCGAT GGGATTTGACC CCCAGCCCTC CAAACTTTTT CCTGGGCTCT  
GGTAGAACGA CCTCGCGAAA TATGACACTT ACTCACCCAG CTRACGACCC GCGCGGCTTA CCCTAACCTG GGTGTGGGAG GTTTTGAAGG GGACCCGAGG

5201 CCGCTCTTCC ACTTGTCTCC TCCCTCCCTT TGACAGGGAG TTAGACTCGA AAGATGACC CCGCTCTGCT TCTGTCTGCT TCTGTCTGCT TCTGTCTGCT  
GGATAGAGG TGAACGAAAG AGGGAGGGAG ACTGTCCCTC AATCTGACTT TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG

5301 TTTTCTCTTT AAGTCTCTG CCTTCCCTCAG CCTAGGACGC CAACTTCTCC CCACCTCTGG AGCCCTCGAT CCTCTCAG AGGTCTGAGC AATTTTCAGA  
AAAAGAGAAA TTAGGAGAGC GGAAGGGGTC GGAATCTCTG GTTGAAGAGG GGTGTGGGACC TCGGGGCGTA GGAGAGTGTG TCCAGCTCCG TTTAAAGTCT

5401 GAAGTTTTC AAGTCTGAGG TTTGGCTCCC CTATCTCTGA TATTGAACT CCGAAATAGT TTTTGGACTA GAGGAGGCTA GAGGAGGCTA GAGGAGGCTA  
CTTCAAAAGT TGAACGAAAG AAACCGAGG GATAGGAGCT AATCTGACTT TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG TGCTGCTGAG

5501 ATCCCACTCC ATCCCACTCC TTAGCTTCCA AAGACGAGTT CTGTCCCTTC CCTCCAGCTT TCACCTCTG TGAGATCCAC GAGTCAGATT TCTATTCTCT  
TAGGGTGAGG TAGGTTAAGG AAGTCAGGGT TTCTGTCTAA GACAGGAGG GAGGAGTCTGA AGTGGAGCAC TCTTAGGGTG CTGAGCTTAA AGATAAAGAA

5601 AATATTGGGG AGATGGGCCC TACCGCCCGT CCGCCGTGCT GCATGGAACA TTCCATACCC TGTCTCTGGC CCTAGGTCTC AAACCTAATC CCAACCCCA  
TTATAACCCC TCTACCGGG ATGGCGGCGA ACTGGCTTGT GCGGGCACGA CACTCTTGT TACCTTGTG TACCTTGTG TACCTTGTG TACCTTGTG

5701 CCGCCAGCTA TTATATCCCT TOCTGGTCTC CAAAAGCAC TTATATCTAT TATGTATATA TAAATATATT ATATATAGT GTGCGTGTGT GTGCGTGTGT  
GGGGTCTGAT AAATAGGAA AGGACCAAGG GTTTTCTGTG AATATAGATA ATACATATTT ATTTATATATA TATATATCTA CACGCACACA CACGCACAGC

5801 GTGCGTGTGT GGTGTGTGTG GAGCTTCTCT GTTTTCAAGT GTGCTGTGGA GTTCAAAATC GCTTCTGGGG ATTTTGTAGT GACTTCTTGG CTGTCTCTGT  
CACGCACGCA CGCACGACG CTCGAAGGAA CTTTGGCTCT TCTGGCTGTT GGAGACAGTC CCGGCTCTCT CCTTTATCCT TTCTCAAGTC TGTCTGCTCT AGACACTTCT

5901 TTTTGTCTTT TTTTGTGTGT TCTCGGCTCC TCTGGCTGTT GGAGACAGTC CCGGCTCTCT CCTTTATCCT TTCTCAAGTC TGTCTGCTCT AGACACTTCT  
AACAGTGAAG AAACAACAAC AGAGCCGAGG AGACCGACAA CCTCTGTCTG GCGCGGAGAG GGAAATAGGA AAGAGTTCAG ACAGAGCGAG TCTGTGTAAG

6001 CAACATGTCT CCACTCTCAA TGACTCTGAT CTCCGGTCTG TCTGTATATT CTGGAATTGT CCGGGACATG CAATTTTACT TCTGTATGTA AGTGTGACTG  
GTTGTACAGA GTGTAGAGTT ACTGAGACTA GAGGCGACAG AGACATAATTA GACCTAATAA GCGGCTGTAT GCTTAAATGA AGACATCTAC TCACTGTGAC

6101 GGTGTGAGAT TTTTATCAAT CTATATCTGT GAGAAATCTG GGTGGAAATG TCTGATCAGG AGAAGGGCCT GCCACTGCGC ACCACAATTC ATTGACTCCA  
CCACCATCTA AAAAATGTTA GATATAGCAA CTCTTAGAGC GGTGGAAATG TCTGATCAGG AGAAGGGCCT GCCACTGCGC ACCACAATTC ATTGACTCCA

6201 TAGCCCTCAC CCAGGCTGTA TTTGTGATTT TTTTCAITTT GTTTTTTTGT ATTTTGCACC TGACCCCGGG GGTGTCTGGG CAGTCTATCA CTGGGCGAGT  
ATCGGGAGTG GGTCCGACAT AAACACTAAA AAAAGTAAAA CAATAAAGG TAAACAGTGG ACTGGGGCCC CCAAGACCCC GTACAGATAGT GACCGTCTGA

6301 CCGCTCCCCC CCTTGGTCTT GCACGTGCGC CAATAAAGG GTTATTTTTT CTTTGTAAAA ACTCTATCTT TCAGGTCAAA GTGTCTGTGT TCCCTGGACA TCTACTACAT  
GGGAGGGGGG GGAACCAAGA CGTGACAGCG GTTATTTTTT CTTTGTAAAA ACTCTATCTT TCAGGTCAAA GTGTCTGTGT TCCCTGGACA TCTACTACAT

6401 GGTCTCTCTT CAGAAAAAG GAGTTTGGAT TGCTAGGGAA GTCTTGTCTG CACTTGTGTT GACGCTTAA GTATCAGAAC CTACAACGGG ACTAAAAAGG  
CCGAAGGAAA GTCTTTTTTG CTCAACCTA ACGATCCCTT GTCTTGTCTG CAGAACGACC GTGAATCACC CTGCGGATTG CAGGCTTAA GTATCAGAAC

6501 AGTGAGAGCT TGCTAGGTTT TCCATGTTC CAGGCTGGG CCACTCTGTT CCACTCTGTT CCACTCTGTT CCACTCTGTT CCACTCTGTT CCACTCTGTT  
TCACCTCTGA ACGATCAAAA AGGGTACAGG GGTGGATGAA CTTTGTAAAA ACTCTATCTT TCAGGTCAAA GTGTCTGTGT TCCCTGGACA TCTACTACAT

6601 TGGGAGAAIT TCAATGATCG AAAAGAAATTT ATTCACCTTG GTGTGTCAAT GAACTTTTCT CAAAGATTTA GGGCAAGGGT GTAAAAAGCT GGCACAACCT  
ACCTCTCTAA AGTACTAGCC TTTTCTTAAA TAAGTGAAGC CCACAGTTTA CTTGAAAGTC GTTGTCAATT CCGGTTCCCA CCGGTTCCCA CCGGTTCCCA

6701 GTAAATCCTA GCATTTTAGA GGTGGAGGCA AGGGATCAA CTGTGTGAGT TCAATGTCTA GTGATCAAGC GATAGCAAGC GATAGCAAGC GATAGCAAGC  
CATTTAGGAT GGTAACTCTT CCACTCTGTT TCCCTTAGTT TCCCTTAGTT TCCCTTAGTT TCCCTTAGTT TCCCTTAGTT TCCCTTAGTT TCCCTTAGTT

6801 GAGGGCTTGG TACACAGGG GAGCCAGAG TTTCTGTGTT AGGGTAGTGG AGGGCAAGTG GAGAGTGAGA GTTAGCCCTA GGGAGATTCT ACAGGCAATG  
CTCCGGAACC ATGTGTCTCC CTGCGTCTTC AAAGCACACC TCCATACACC TCCGCTTACC TCTCTACTCT CAATCGAGT CCGCTTAAGA TGTCCGTTAC

6901 ATGCAGAGTT CAGACGCTCC CTTTGAAGC ACTAGAGAGC CGCAGCAGT TTTTGGAGGA GAAGGTTAGA GTTAGGTTAG GTTAGGTTAG GTTAGGTTAG  
TACGCTCTAA GTCTGGAGG GAAACTTCTG TGATCTCTCG GCGTCTGTTA ACTCTGTTA TTTTGGAGGA GAAGGTTAGA GTTAGGTTAG GTTAGGTTAG

7001 CTGAGGAGGA CGCTGAGGG TTCAAGAAGG ATCGAGAATG GAAAGCAGAG GAGAAGAAG ATCCAAGAGG CATGAGGAG GCAGAACACA TTTCTCTTCT  
GACTCTCTCT GCGACTTCCA AAGTCTCTCC TAGCTCTTAC CTTTGTCTCT GAGTCTCTCC TAGGTTCTCC GTACCTCTCT CGTCTGTGTG TTTCTCTTCT

7101 TTAATAGCAA GCCTGGAAAG GATAACTTGC TGCAGGAGGA GATGCTCACC AGTGGGTGG TCTAGGGGGT TCTTGGAAAA GAGAAGGACT TTGCTCAAGC  
AATTAATGCTT CGGACCTTTC CTATTGAAGC ACGTCTCTCT CTACAGTGG TCAGCCACCC AGATCCCCCA AGAACCTTTT CTCTTCCGTA AACGAGTTCG

FIG. 4B-2

7201 CTCGGTTCGCC CCATTCTCCG TCTTCTCA A GCTTGTCTTC CATTAAAGTGT GTGTCTCAAG GCCACCTC CAGGACTCC TTGTGAGACG ACCTCTTATG  
GAGCCAAAGGG GGTAAAGAGCG AGAAGACGTGT CGAACAGAAG GTAATTCACA CACAGAGTTC AGTCTGAGG AGCTCTGCG TGAAGATAC

7301 CTCGAGTTCG TTAACAAACG AATTGCTGCT TCCCGTGTCT TCTCCAGTCC TCCAGTTACC AGGGCTTAAAG GTGTGATCAC AACTCTATCC  
GAGCTCAAGT AATTTTGTGT TTAACGGAGC ACGGCACGAG AGAGGTGACC GAGTCAATGG AGTTTTCTGG TCCCGATTTC CACACTAGTG TTGAGATAGG

7401 CCATTACTGC TCCAACGCGC AGACAGGACT GAGCCGAGGT GAACAAATGA ACAAATATGA CTAATAATGC ATGCGTGATT AAATACATAA AAGACAGAT  
GGTAATGACG AGGTGCGCTC TCTGTCTGA CTCGCCCTCA CTGTGTTACT TGTTTTTACT GATTATTACG TAGCACTAA TTTATGTATT TTCTGTCTA

7501 GACTGGATGA GCAAAATCGTT TAAGGAGAGA CAGCAAGATC CTAGAATTTT GGAGACTAAT TTAATCCAT CTTTGAGATG CATTGTGTCG GAAATTCCTG  
CTGACCTACT CGTTTAGCAA ATTCCTCTCT GTCGTCTAG GATCTTAAAA CCTCTGATTA AATTTAGGTA GAAACTCTAC GTAAACCAGC CTTTAAAGAC

7601 GGAGGAAAAA AAGTGTAAT ATGAAGAGAG AATAAATGAG AATAGGGGTG GCTTCAGAGA GGTTAACTGC GCGCTGGTCG CTTTGTGACA AGAATGTGAA  
CCTCCTTTTT TTACATTTTA TACTTCTCTC TTATTTACTC TTATCCCCAC CGAAGTCTCT CCAATTGACG CCGACACAGC GAAAACATGT TCTTACACTT

7701 TTGCAAGGAG CAAAATGGGA TAGATACTCC CGCCCGAAG GTGGAAATGA ACCACTCTGT CGCTAAACAG CTACAGGTTT GAAGCCTGCA CCCAGACCA  
AAGCTCCCTC GTTTTACCTT ATCTATGAGG CGCGGCTTTC GTGGAGTGA TGATGTCCAAA CTTCCGACGT GGGGCTGGT

7801 CTGAGGATCA TCCGGGCGAA AGGAGCTATT TTCAGTTAGT TATATAAAGG CGAGATACTA CTACTTTTTA CACTTATGGT CATTATTGTT GGTATACAGT  
GACTCTTAGT AGGCCCGCTT TCCGTGATAA AAGTCAATCA ATATATTTC GCTCTATGAT GATGAAAAAT GTGAATACCA GTATATAACA CCATATGTCA

7901 AGATAATTAA TTTCAATGGT TTCGAACATT TTTTTCCTACT TTTTCTGTGT AACATGTGTT TCCCTAGTAA AGTGTTCGGT GAATGACTCT ACTTAACATA  
TTTATTATTG AAGCTTAGCA AAGCTTGTAA AAAAAAGTGA TTAGGATCAAT AGGAGTCAAT TCACAAGGCA CTTCCGACGT GGGGCTGGT

8001 AAGTAAGTAG CTTCATTGCG ATAGCGCCTT GCATTTTGGG AAGCAGCGCC TAAAGTGCCT GTCTCCCTAA CTAAGACGAG AATTTTTTGC AAGGTGAAAA  
TTCATTATC GAAGTAAACG TATCGCGGAA CGTAAAAACC TTGCTCCGGG ATTTTACCGA CAGAGGGATT GATTTTCTGC TTAATAAACG TTTTCACTTTT

8101 GTCAGTTTAA TTTTGTGTGT TTTGTGTGCT TGTGTGTGTT TAATGGAAAA ACTTCTCAGC CGGCCCATTC GTAGCAGAA TCGAGATTTT CTGCAAGCGA  
CAGTCAAAAT AAAACAACAA AACAAACAGA ACAAACAAAA CACTCTTACT TGGTGAAGTA GCGGGTAAAG CATCGTCTTA CATGCTTCGCT

8201 GAAGCAAGAC TTTCGTAGGG TCTGACGGCA CGCGGCCGCA GAGCGACACC TGCCGTGTCT TTATAGAACT GCAAGTAGT AGGGAATCTA CTGAGTCCCT  
CTTCGTCTG AAAGCATCCC AGACTGCCGT GCGCGCGCT CTGCTGTGAG ACGGCAACGA AATATCTTGA CGTTCATACA TCCCTTAGAT GACTCAGGGA

8301 AGGTGATGGA GTTGACAACC AACTCCCTTT GAGTTTAGAC GCTAAAAACC ATCCCTTTTT ATATTATGTT GATTAGCCCA GGGAACTPAA GGCTCAGACA  
TCCACTACTT CAATGTGTG TTGAGGGGAA CTCAAATCTG CGATTTTGTG TTAGGAAAAA TATAAATACA CTAATCGGTT CACTTTGATT CCGATTCTGT

8401 TGGATAATAC CACAGCCGAG TCTTGTAGC CCAACTCCCT AGGGGAAATG AAACCTACAG TTGTGTTTAT AATATGCTTG GCCCAGGGG AGTGGCCCTA  
ACCTATTATG GTGTGCGCTC AAGAACATCG GGTGTAGGGA TCCCTTTTAC TTGTGATGTC AACACCAAAA TTATAGGAAC CGGGTCCCCG TCACCGGGAT

8501 TTGCGAGGAG TGGCCTTATT AGCGGAGGTG TACCTTTGTA GAGAAAGTGT TCACCTGGAG GCGAGGTTTT GAGGTACGTA TGCTCAAGTC TGGCCAGTGT  
AACCCTCCTC ACCCGAATAA TCCCTCCAC ATGGAACAA CTCTTCACAC AGTGAACCTC CTCCCAAAA CTTCCATCAT ACGGTTTACA ACGGTTTACA

8601 GATCCTGGCT GTCTGCGAGG TCTGCGCTCT TCTGCGCTCT CTTGCGATCA AGGTGTAGAA CTCTCAGCTC CTCTCCAGC ACCATGTCTG CCTGCTTAAT  
CTAGGACCGA CAGACGTCTT GCACCGAGAG AAGACCGAGC GAAGCCTAGT TCCACATCTT GAGAGTCGAG GAAGAGGTG TGTGTACAGC GGACGAATTA

8701 GCTTGTCTTC TTTCCATGAC GATAATGAAC TGTGCTCTG AAACGTGAAG TCAGCCCCC AGTTACATGT TTTCTTTTAT AAGAGTTGCA TATATATATG  
CGAAACGAAG AAAGGTACTG CTTATTACTT ACACCGAGAC TTGTGACATTC AGTCCGGGG TCAATGTACA AAAGAAATA TTTCTAACCT ATATATATAC

8801 TATGTATATA TGTATGTATA TATGTATGTA TATATATATA TATATATATA TATATATATA CAGGGTCTCA CTCTTTAGCT CTGGCTGGCC TGAATTCAC TATGTAGCCC  
ATACATATAT ACATACATAT ATACATACAT ATATATATAT ATATATATAT GTCCAGAGT GAGAAATCGA GACCGACCGG ACTTTAGATG ATACATCGGG

8901 AGGATGCGCT GAACTTTGAA GCAATCTTCC TGCCCTCAGC TCCCAATGGT ATTACAGGCA TGAGTCACAA CAAGCCATTT AAATCTTTATG ATGACTTATA  
TCCTAACCGA CTTGAAACTT CGTTAGAGG ACGGAGTGG AGGGTTACCA TAATGTCCGT ACTCAGTGT GTTCGGTAAA TTTGAAATAC TACTGAATAT

9001 AGAAGACAGA AAATCAGAT TCCCTTACCT TCTTACAGTA TCTTACAGTA TCCCTACATA AACAGCCCTA CCGCCACCTC CTGGAAGTCG  
TCTTCTGCT TTTAGTCTCA AGGAAATGGA TCAAGTGTCT AGGGATGTTA GATTGGAGCA AGCGAGGTAT TTGTCCGGAT GGGGTGGGAG GACCTTGAGC

9101 TTGTAGGAAT GCTGACGGCT CTCACAGGCA CACTCTCTCT TGGTTAATCT CTTTACGCTG GTTGCCTTCC CCCCCATGT CCAATGTGGC CAAAGCCTCT  
AAACTCCTTA CGACGTCCGA GAGTGTCCGT GTGAGGAGGA ACCAATTAGA GAATCGGCAC CAACGGAAG GGGGGTACA GGTACACCGG GTTTCGGAGA

9201 CATCCTGTTC TCAAAATACA CTAGCTAGTA AGGCTCCCC ACCTGACCCG TTCTTAAATAT TAGAAAAAGG TCACCTTTCT CCGCCACAG ACACCAAAAC  
GTAGGACAAG AGTTTATGTT GATCGATCAT TCCGAGGGGC TGGACTGGGC CAAATTTATA ATCTTTTCCC AGTGAAGAG GGAAGGTGTC TGTGTGTTG

9301 CACCATATGC TTGTCACTTA CTACCTGACT ATGAAGGTTA ATAGATGTCT TCACAACTTC TCTCTGAGCC TCAGTTTCCC CACCTGCTAT ATGCACTGTA  
GTGGTATAG AACAGTGAAT GATGGACTGA TACTTCCAAT TATCTACAGA AGTGTGGAAG AGAGACTCG AGTCAAAGGG GTGGAGTAT TACGTAGACT

9401 GACACAGAT TCCCTAGAGC TGTGGTCTCT CTCATTCTCA GTGCTGGGAC CGTTTAAATC ATTTCTCAT ATTAAGGAGTA TAAAGGAGTA CACCACTTAT  
CTGTGCTTCA GTGATCTCG ACACCAAGAG GAGTAAGGAT GTCTTGGAGT CACAGACCTG CCAAAATATG TTAAGGAGTA CACCACTTAT CACTTGTAT

9501 TATTTCATTT GATACCTCAT AACTGTAAAT TTTTCTATTG TTATGAATAG TAATGTAAAG ATTTGTGTTT CCGAGTGATC TTAGATGACC CTGTGGAAGA  
ATAAGGTAA CTATGAAGTA TTGACATTA AAAAGATAAC AATACTTATC ATTACATTCG TAAACACAAA GGGTCACTAG AATCTACTGG GACACCTTCT

9601 GTCAATCCAC CCCAAAGGG TCCCCACCAC AAGTTAAGAA TTCTTGCCAT AGGAGAAATCA GTCCCTTAGT TCTCCTTAGT CAGGGACCAT GGATTAACAC TTGGGTCGAC  
CAGTTAGGTG GGGTTTCCCT AGGGGTGGGT TTCAATTTCT AAGGACCTAT GTCCCTTAGT GTCCCTTAGT GTCCCTTAGT GTCCCTTAGT GTCCCTTAGT GTCCCTTAGT

9701 CCTTCTGGGA GCGCTAGAG CTAATGACAG CTACATCAAT TTTCTGAATT TTGTGTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT GTGTGTGTGT  
GGAAGACCT CCGGATCTC GATTACTGTC GATGTAGTGA AAGACTTTAA AACACACACA CACACACACA CACACACACA CACACACACA CACACACACA

9801 GGGTGTGAG ATAGGCCAGT GGCCTTAGTG TTCTTGAGC CATTACTACG CAGAACTCTC CCTCACCTG ATTTCTTTAG GTGAACACTA TGTCTTCATA  
CCCAGACTC TATCCGTCA CCGAAATCAC AAGGACTCG GTAATGAGG GTCTTGAAG GGGAGTGGAC TTAAGAAACTA CACTTGTAT ACAGAAGTAT

9901 GTGGGGGTG CAATAGCAGC AACAGTGAAC TAAATTTTAA AAGTAGAAT CAGCTGGAGA TACAATATT CAGATTTTGA AGTTGGGGT GATTGTCTAA  
CACCCGCCAC GTTATCGTCG TTGTCACTTG ATTTAAAAAT TTCACTTTGA GTGACCTCT ATGTTTATAA CGTCAAAACT TCAACCCAC CTAACAGATT

10001 TAACTTAATA ACATAACCA GAAGAGAGGC CCTTGTGCTT TGCAAACTTT ATATGCCCTA GTACAGGGGA ACGCCAGGCG CAAAGAAGTG GAGTGGGTGG  
ATTGAATAT TGTATTGGGT CTCTCTTCCG GGAACCCAGA ACGTTTGAAG TATGTGAGAGT CATGTCCCTT TCGCGTCCCG GTTCTTACC GTTCTTACC

10101 GTGGGGAGC AGGGTGGGG GAGGTATAG GAGACTTTCC GAGTAGCAAT TGAATGTAA ATGAAGAAAA TATCTAATAA AAATTTGAAA AAAAATGTTA  
CATCCCCG TOCCACCCCC CTCCCATATC CCTGAAAGG CCTATCGTAA ACTTTTACATT TACTTCTTTT ATAGATTATT TTAAACTTTT TTTTACAAAT

10201 CCCCAGTTTG GCTGGATCT CACTACTTCA ACCAGACTGG CATGTGACTC TGCTGAGATC TGCTTACTTC TGCTTCTCG GTGCAGAGA CAATTTTTTG  
GGGTCAAAAC CGGACCTAGA GTGATGGAGT TGTCTGACC GTACACTGAG ACGACTCTAG ACGGATGAAG ACGGAGGACC CAGTACTTCT GTTAAACAA

10301 AAGTTAGTTC TCTTCTCCA TCTTGTGAT TCCAGGATTT TCCAGGATTT GACTCGGCTT GACTCGGCTT GACTCGGCTT GACTCGGCTT GACTCGGCTT  
TTCAATCAAG AGAAGAGGT AGGTCCCTAA CTTGAGCCCA GTAGTCCGAA CCGAGCTTCA CTGAATGAAT CCACAGAGGG GGTGCTTCC AGACCTCTC  
TCTGGGAGAG

10401 GGTTTGATTA GTTAGATGCT GCATTTCTAT CCTGACTTTC GCATTTATGA GATAGAGCAA TGTCTATAAC ATCTCTTACA ATGATATGTA TATCAAGAGC  
CCAATCAAT CAATCTACGA CGTGAAGTAC GGACTGAAG CGTGATACAT CTATCTCGTT ACAGATATTG TAGAGGATGT TACTATACAT ATAGTTCTCG

10501 CAAGTGATGA GATGGCTCAG TGGGTAAAG CACAGACTGC TCTTCCAAG GTCCCGAGTT CAAATCCAG CAATCTTCCA TTCCCTCTTA TCTCCCTTCA  
GTTCACTACT CTACCGAGTC ACCCATTTCT AGAAGTTTTC GTGCTGAGC CAGGGCTCAA GTTTAGGTC GTTAGTGTAT CACCGAAGGT AAGGGAGAAT

10601 TGAATGTCT GAAGACTGCT ACAGTGTACT TACATATAAT AAATAAATA ATCTTAAAAA AAAAAACCC AGCGGGGGT GGTGGCGCAC GCTTTAATC  
ACCTTACAGA CTCTGACGA TGTACATGA ATGTATATTA TTATTTTAT TAGAATTTT TTTTGTGGG TCGGCCCGCA CCACCGCGTG CGAAATTAG

10701 CCAGCACTTG GGAGGAGAG CGAGGGGAT TCTGAGTTC GACGCCAGC TGGTCTACAG AGTGAAGTCC TCACTCAAG TGCTGTCTGT CTTGATGTGT CTCTTTGGGA

FIG. 4B-3

10801 GTCTCGAAAA AAAAAAGAGA GAGAGCTG TGAGAGGGCA ATAATCTTAA CATTCTGTG GTTGTCTCTGTAGTCTA TTCTGATAAG CAATGCTGGC  
 CAGAGCTTTT TTTTTTCTCT CTCTCCCTTC ACTCTCGGT TATTAGAATT GTAAAGACAC CAACAGAAAC GACATCAGAT AAGACTATTG GTTACGACCG  
 10901 TTGCTCCCAA GGTAGGAAGT AACATTCTT TATAAAGGT ATTTGCTCTG CTTTATTTTT CTGTTTTATT TATGGTGTG AGGATGGAAC CCAGGACCCCT  
 AACGAGGGTT CCATCCTTCA TTGTAAAGAA ATATTTTCCA TAAACGAGAC GAAATAAAAA GACAAAATAA ATACCACGAC TCCTACCTTG GGTCTCTGGA  
 11001 TGCAAGCAA GGCTAGCTGT TTACCACTGA GCCATACTCC AGCCTTGCAC TGGGGGATTG TAGGCAAGGG TTCTACCACT GAGCCACACT CCCCACCCCC  
 ACCGTTCTGT CCGATCGACA AATGGTGACT CGGTATGAG TCGGAACGTG ACCCCCTAAG ATCCGTTCCC AAGATGGTGA CTCGGTGTGA GGGGTGGGGG  
 11101 ATCCCTCTCT GGAAGATCT AGGCAGTTC ATACCTAGCC TTTGATCTTT TAAGACGGTC TTTACTAGAC TCAGTT  
 TAGGGAGAGA CCTTCTAAGA TCCGTCAAGG TATGGATCGG AACTAGAAA ATTCTGCCAG AATGATCTCG AGTCAA

046597-139

FIG. 4B-4

10 20 30 40 50 60 70 80 90 100  
AAGCTTGCAGGGAGGTAGGAGGCACTGTGGCGTTGATTCAATGCACCTGGCCCTTATCCTGGATGAGATTCACAGTCAAAAACGTGAGCTTGA  
TTGAAACGTCCTCCATCCTCGTCGGACACCGCACTAAGTTACGTGGACCGGAATAGGAGCTACTCTAGCCAGTGGTCACTTTTGACACTCGAACT

110 120 130 140 150 160 170 180 190 200  
AGGCTTGGGTGCTTAACATCTATTTTACAAATCTTATTAGCACTTAGAACTGTGAAATATTGGAAAGCTACTTAAACCTTCTAACTCCCTCCTCC  
TCCAGAACCCACGAATTTAGATAAAAAATGTTTAGAATAAATCGTTGAATCTTGACACTTTATAACCTTTTCGATGAATTTGGAAGATTGAGGAGGAGG

210 220 230 240 250 260 270 280 290 300  
ACACTATGAGAATGTACATTTTCTATTTCAGTTATTTTGTAGCAGTAAACAGATGAATCAAGGAATATGCCCATCACATCAAGAGTGTCTCTAAATGGAC  
TGTGATACTCTTACAATGTAAAGATAAGTCAATAAAACTCGTCAATTTGTCTACTTTCCTTATACGGGTAGTGTAGTTCTCACGAGGATTTACCTG

310 320 330 340 350 360 370 380 390 400  
TTGCTTTGTTATTCATTACAGTGTGGCCCTTGACTTTTCACTCGGCACCTCTAGCAGAAAAACAAATCCGCCAGATGGAGCTGGAGAGATGGCTCAGCTGT  
AACGAACAATAAGTAAATGTACACCGGGAACTGAAAGTAGCCGTGAGGATCGTCTTTTGTGTTAGGCGGTCTACCTCGACCTCTCTACCGAGTGCACA

410 420 430 440 450 460 470 480 490 500  
TAAGAACTACTTATCCCTACACAGGCCCTGGAGCCAGTTCCAGCACCCACACGGTGGCTCACACCATCTGTAACCTCAGTTCTAGGAGACCCGACTCCC  
ATTCTTATGAATAGGGATGTGTCCGGACCTCGGTCAAGGGTCTGGGTGTGCCACCGAGTGTGTGATAGACATTGAGGTCAAGATCTCTGGGCTGAGGG

510 520 530 540 550 560 570 580 590 600  
TCTTCTGTCTGAAACACCCAGGCACCGGTGCGGTACATACAAACATGAAAGCAAAATACACATTACATAAAATAAATCTTAAAAATGATTGGGGTG  
AGAAGACAGACTTTTGTGTCGGTGGCGCACCGCGATGTATGTTGTCTTTCCTTTTATGTGTGTAATGTATTTATTAGAATTTTATTACGAGCCAC

610 620 630 640 650 660 670 680 690 700  
GGGGAAGGAAAAAAGGATGTAGAAAAATCGATGTAACCTGTTTTCCTTTTGCACAGATCTAAGTAGGGAAGGAGAACATTCTCTTACCATCGAGAT  
CCCTTCTCTTTTTCCTACAATCTTTTAGCTACATTGACAAAAAGGAAAAACGTGTCTAGATTATCCCTTCTCTTGTAGAGATGGTAGCTCTT

710 720 730 740 750 760 770 780 790 800  
AATTGTTTTCATTGCCCCCAAGTCTGCTAATAGAGCTTGTCTACCTTTCATGGCTGTCTAAGGATGAGGCAAGATGGACTTCAGCTTTCAGACTGTGTCT  
TTAACAAGGTAACGGGGTTCAGACGATATCTCGAACGATGGAAGTACCGACAGCATTCTTCTCCTGTTCTACCTGAAGTCAAGGCTCTGACACAGA

810 820 830 840 850 860 870 880 890 900  
GCTCAAAATGTGGCTACTCCTGTTTCTGACCCCTCTCTGCTGCAATGTGGACTTTCAATTAATTTCCCTGCATCTTTTACATATTTGATTTAAAAA  
CGAGTTTACAACCGATGAGGACAAAGACTGGGGGAAGGACACCGTTACACCTGAAAGTTAATTAAGGGAAGGTAAGATTAAGATAAATTTT

910 920 930 940 950 960 970 980 990 1000  
TATTTTATTTTATGTAATTTGTATGTATATGTCATGTCAATAGCATATGTGTGTGTTTCCATGGAACCAAGGCAACAGATTCTCCAGAGCTGTAGAAA  
ATAAAATAAAATACATTAACATACATATACGTACAGTTATTCGTATACACACACACAAAGGTACCTTTGGTTCCGTGTCTAAGAGGTCTCGACATCTTT

1010 1020 1030 1040 1050 1060 1070 1080 1090 1100  
TGGGTGTGAGACGCCCACTGTGGGTGCTCGGAACCAACTCGGGTCTCTGTGGAAGACAGCGAGCACCCATAATGACAGAGTATCTCTCAGACTCTACT  
ACCCGACACTCTCGGGGTGACACCCACGAGCCTTGGTTTGTAGCCAGGACACCTTCTGTGCTCGTGGGTATTACGTCTCCATAGAGAGTCTGAGATGA

1110 1120 1130 1140 1150 1160 1170 1180 1190 1200  
TTAAATTTCAATTTATCTTTTATTTTAAAGTTTCCAGTAACTATAGGAAAGTACATGGGTATATAGATCCCCAGTACCAAGATTCTCTCTTTGAG  
AATTTTAAAGTTAAATAGAAAAAATAAATTTCAAGGTTTATGATATCTTTCATGTACCCATATATCTAGGGTCTAGGTTCTAAGAAGGAAACGTC

1210 1220 1230 1240 1250 1260 1270 1280 1290 1300  
GTAGCACAACTTGGTCTGCTTCACATAAAGAAATGGAAGTCAATTAACACTCATCACCTGTAAAGTAGAATTGAACCTTGACAGAACAGCGAAGTGA  
CATCGTGTGAAACAGACGAAGTGTATTTCTTACCTTTCAGTAAATTTGTGAGTAGTGTGACATTTCACTCTTAACTTGAGACTGTCTGTGCTCTACT

1310 1320 1330 1340 1350 1360 1370 1380 1390 1400  
GTCTGACTTCCAGGTAACGTGAGCCTCTCTTCTCTTAAAGACACAAGCCATACACAGAGTAAAAATAAATTTGGGCATGGTGAAGGAAACACGAGG  
CAGACTGAAGTCCATTGACTCGGAAGAAAGGAGGATTCTGTGTTCGGTATGTGTCTCATTTTATTTGAACCCGTACCACTCTTCTCTTGTGCGTCC

1410 1420 1430 1440 1450 1460 1470 1480 1490 1500  
AGGGCTAGCCCAAGTCTGAGAGTCTGTGAGTGTGCTCGGTTTATAACGAGAGCCCACTTGCAGCGAGGTAGTCACTGCTCTGCTTAAACAGAACTTAAG  
TCCCGATCGGTTGAGACTCTCAGCACTCACAGGCCAAATTTTGCCTCGGGTGAACCGTCCATCAGTGTACGAGAGATTTGTCTTTGAATTC

1510 1520 1530 1540 1550 1560 1570 1580 1590 1600  
AAAACACTTACGAAGCAAACTGGGGAAGTCCATGCAAGCATGTGACTGACTGGTGGCAATGACCGAAACACAGCAGCCACTAGAAAGGAAAGGGT  
TTTGTGTAATGTGCTTCTGTTACCCCTTACGGTACGTTCTGACACTGACGACCCGTTACTGGCTTTGGTGTCTGCTGCTGATCTTTCTCTTCCCA

1610 1620 1630 1640 1650 1660 1670 1680 1690 1700  
AGTGCGCCACACTGTAGTTGTGAAATGAACCTTATTTATTTTGTAAAAACGTGTAAGAAGCAAGATGTCTTCTTTCCCACTACCTTTGCGGCAGG  
TCACGCGGTGTGACATCAACACTTTTACTTGAATAAGTAAATAAACTTTTGCACATTTCTTCTTACAGAGAAAGGGTGAAGGAAACCGCTCC

1710 1720 1730 1740 1750 1760 1770 1780 1790 1800  
CGAGCACTTCTGGAATTTATAAAGTGGATCTTTTGGGGACTTCTCATTAACATTTCTACTGCTCATCTATGTCTGTCTCAATAGAGAAATGTCTTTG  
GCTCGTGAAGGACCTTAAATATTTACGCTAGAAAGACCCCTGAAGATATTGTAAGGATGACGAGTAGATACAGACAGTTTATCTCTTACGAGAAC

1810 1820 1830 1840 1850 1860 1870 1880 1890 1900  
AACAAGTGTGTGTGTGTGTGTGTGTGCGCGCGCACGCGCACTCACTCTGCTCTGTTGAGGTCCAGTTTGTATGGTCCCGCAGAGGTATATTGAGTAT  
TTGTTACACACACACACACACACACGCGCGGTGCGGTGAGTGAGACGAGACAACTCCAGGTCAAAATACAGGGCGGTCTCCATATAAACTCATA

1910 1920 1930 1940 1950 1960 1970 1980 1990 2000  
CATTTCTCAAGAGCTTCAGCTGGGAGACACTGCCTCTTACTGGCCCTGAAGGTCACTAGCTGATTCTATCTCCGTTTGGGCTGGCGCGCTTTGGGGATCTCT  
GTAAGAGTCTCGAAGTCGACCTCTGTGACGGAGATGACCGGACTTCCAGTGTACGACTAAGTAGAGGCAACCCGACCGCGGAAACCCCTAGGAG

2010 2020 2030 2040 2050 2060 2070 2080 2090 2100  
CTATCTCTCTTCCCAAGTGTGGGATAACAAGTTGGCAACCATGAGCCTTTTAAATGTGAGTTTGGAAAGCTCAACGCGAGTTTTCATGCTTGCAC  
GATAGAGAGGAAGGGTACGACCTTATGTTCCAAACCGTGTGTACTCGGAAATTTTACACTCAAACTTCGAGTTTGGCTCCAAAGATCAAGACGTG

2110 2120 2130 2140 2150 2160 2170 2180 2190 2200  
TGAACCTTCAAGCTGAACCGTCTCCCTCTCTCTCTCTCTTTTCTCTTTTCTCTCTTTTAAAAACACATCTGTCTTTAAAAAAGGAAAGG  
ACTTTGAAGTGTTCGACTTGGCAGAGGAGAGGAGGAGAGAAAAAGGAAAGAAAGAAATTTTGTGTAGAACAGAAATTTTCTTTTCTTCTT

FIG. 5A

004659B-1E1699

2210 2220 2230 2240 2250 2260 2270 2280 2290 2300  
CCCCAAACAAGTGTAAAGTATTCCCTATGTGTGTGGAGGGAGGGGATATAGGAGGCTGATTCACTAGAGTCTTGTTAAATTGGGTGCCATAGCCAAT  
GGGTTTGTTCACATTTTCATAAAGGGATACACACACCTCCCTCCCTCATATCTCCGACTAAAGTGACTCTAGGACAAATTTAAACCCACGGTATCGGTTA

2310 2320 2330 2340 2350 2360 2370 2380 2390 2400  
CAAGACGCATCGTTTCTCTAAGAAATTCATAATGGGGCGATTACACGGGCGCTGCAGGTTCTGGTTGTATTAGAGGAGACACTGTCTTCTTAAGTAAA  
GTTTCTCGGTAGCAAGAGGATTCTTAAGATTACCCCGCTAATGGTGCCCGGACGTCACAGACCAACATAATCTCTCTGTGACAGAGAATTCATTTT

2410 2420 2430 2440 2450 2460 2470 2480 2490 2500  
ACATAGAAGGGGAAGTGTCCAGAAATGTAAATAAGGCTTCGAGAGAAGCCTTGTCTGGCCACCGGGATGGAGAAGACCTACCTTCGCCATCCAGGATCC  
TGTATCTTCCCTTCACAGGCTCTTAACATTATTCGGAAGCTCTCTTCGGAACAGACCGGTGGCCCTACCTCTTCTGGATGGAAGCGGATAGGTCCTAGG

2510 2520 2530 2540 2550 2560 2570 2580 2590 2600  
ATCGTCCCTCCCTCTACCCAGATCTGACAGCCCTCCTTGGCTCTTTTGTCTGAGGTTTGTGAGTTTGTGTTTACTCTCTGCAAGAGAAGTTTCTTAAAC  
TAGCAGGAGGAGATGGGTCTAGACTGTCTGGGAGGAACCGAGAAAACGACTCCAAACAAACTCAACAAAATGAGAGAGCTTCTCTTCAAAGGAATTTG

2610 2620 2630 2640 2650 2660 2670 2680 2690 2700  
ATTCTACCTGTTTCAAGTAAATACACCTCTTAGCTAAGAGGCCACACCCAGGGGAACACCGATAAAAAGAACAGCCAGAACCTTCAGAACGCTGT  
TAAGATGGGACAAGTTCATTTATGTGGAGAATCGATTCTCGGTGTGTGGGTCCCTTGTGGCTATTTTCTTGTTCGGTCTTGAAGTCTTGGCACA

2710 2720 2730 2740 2750 2760 2770 2780 2790 2800  
CGATAGGTACACCAAGCAGCCTTCATACGGAGTTTTCATTCGTGAGGAGCTGAATATACAACAAAGCTAAATGTGAGCAGACCCAGGATGCCCTCTGCTAA  
GCTATCCATGTGGTTTCTCGGAAGTATGCCCTCAAAGTAAGCACTCCCTCGACTTATATGTTTTCGATTTCACACTCGTCTGGTCCGTACCGAGACGATT

2810 2820 2830 2840 2850 2860 2870 2880 2890 2900  
ATGAGGATGCCCAACCAACATGCCCAAGATCTTCAAGTATAATTTTATTATATAGATTTCGCTATGTGTTGACATGTTTTTATAGTGAACCTGGATTTT  
TACTCTACGGGTGTGGTTGTACGGGTTCTAGAAGTTTCAATTAATAATATATCTAAGCGATACACAACTGTACAAAAATATCACTTGGACCTAAAA

2910 2920 2930 2940 2950 2960 2970 2980 2990 3000  
ACAAACCCCTCGTTTGGCCACCTGCTTCTGGCACCATACCTTGAAGGCTTAGGCCAGTGATAAAGGAGCATGCTGTTTCCCTTATTTTTTAAAGA  
TGTTTGGGAGGACCAACCGGTGGACGAAGACCGTGGTATGAATCCGAATCCGTGCACTATTTCTCGTACGGACAAGGGGGGAATAAAAAAATTTCT

3010 3020 3030 3040 3050 3060 3070 3080 3090 3100  
AAAGCACCATGTTACATCATTAAATCATGCATATCAGTGTAGTTAGATCCGATGTAGAGACAATAATCTTATCTCTTGTCTGGCTGAAAGACTGTCCTT  
TTTCGTGGTACAAATGTAGTAATTAGTACGTATAGTCAATCAATCTAGGCTACATCTCTGTTATTAGAATAGAGAAACAGACCGACTTCTTGACAGGAA

3110 3120 3130 3140 3150 3160 3170 3180 3190 3200  
TAAACTATCATTCTAAATGCATTGTTGTTTTTGGCCAGGAGTAAACATGTACAAAGATATTTGTGTGTCATTTCCAGGCGTGAAGGAAAGGAATGGAAG  
ATTGTATAGTAAGATTACGTAAACCAAAACGGTCCCTATTTTGTACAGTGTCTATAAAACACAGTAAAGGGTCCGCACTTCTCTCTTACCTTTCT

3210 3220 3230 3240 3250 3260 3270 3280 3290 3300  
AAAACAGGGGTGAAGGCTGCTGTTCTCTCTAGTCTGCTTGAAGTCTACATAGCTGGGGGGGGGGGGGACTGTTTACATGGGACCGGTTTCTCTCT  
TTTGTCTCCCACTTCCGACGACAAGGAGAGATCAGCGATGAACCTTCAGATGTATCGACCCCCCCCCCCCCCTGACAAGTGTACCTTGGCCAAAGGAGA

3310 3320 3330 3340 3350 3360 3370 3380 3390 3400  
TTGTTCCCTCACTGGCGCCTCTGGCAAGAACTCTCCCTCTCTTCCCCCAAGCATATCTTGGCTGAAAGGTCAGCTCTGAAAGGGGCGCTGGCCAAAG  
AACAAGGATGTGACCCGGAGACCGTTCTTTGAGAGGGAAGAGAAGGGGGTTCGTATAGAACCAGCTTCCAGTTCGAGACTTTTCCCGGACCGGTTTCT

3410 3420 3430 3440 3450 3460 3470 3480 3490 3500  
TTACTGTAGGGGACCGTGTGATGGAACCTGGGTAGACAAAGCACTCTAGCAGCCACTGGAGAAGGACCGGGGCTCTTCTCTGTGCTATTTGCCCTGGAG  
AATGACATCCCTGGCACCACTACCTTGACCCATCTGTTTCTGTAGATCTGTGCTGACCTCTTCTGGCCCCGAGAGAGACAGTAAACGGGACCTCT

3510 3520 3530 3540 3550 3560 3570 3580 3590 3600  
CCCTGACACCGCCAGCTCCCTGCTATCTCTTGTCTATGGGTTTCTGGACCGGACCGGAGGAGTTTCAACCCGAAATGTCTTCTAGGGCTAATCAGGT  
GGGACTGTGTGGCGGTGAGGGACGTAGAGGAACGATACCCAAAGACCTGGCTCGGTCCGTCTCAAGTGTGGCTTTACAGAAGATCCCGATTAGTCCA

3610 3620 3630 3640 3650 3660 3670 3680 3690 3700  
AACTTCGAGCATTTAAAGTTGCCAGATGACGAGAAACAGTAGAGGCGTTGGCAACCTGGATAAGCCCTATCTCTTAATTAATAAATCAGACGGGG  
TTGAAGCCTGCTAAATTTCAACGGTCTACCTGCTCTTTTGTCTATCTCCGCAACCGTTGGACCTATTTCGGGATAGAAGATTAATTTGTAAAGTCTGCC

3710 3720 3730 3740 3750 3760 3770 3780 3790 3800  
CGGGGATG-CGGTGGCCAAAGCACCATAAAACAAACCTTCCAAGTACTGACCAACTCACTGCAAGTTTGTGCCCCGAGTACATCTAGGTTTCAAGGGTCT  
GCCCCCTAC-GCCACCGGTTTCTGTGATTTTGTGTTGAAGGTTTCTGACTGTTGAGTGACGTTCAACACGGGGCTCATGTAGATCCAAGTCCCCAGA

3810 3820 3830 3840 3850 3860 3870 3880 3890 3900  
TGTCTTCAATGCTCCCAACTGCGGGCGGATTTTGGTCCCTTGGGACTTTCAGTGCAGCGGGAAGAGAGTTCTGCACTTGCAGGCTCCTAATGAGGGCGC  
ACAGAAGTACGAGGGTTGACGCCCGCTAAACAAACAGGGAACCTTCAAGTCACTGCGCCGCTCTCTCAAGACGTGAACGTCGAGGATTAATCTCCCGG

3910 3920 3930 3940 3950 3960 3970 3980 3990 4000  
AGTGGGCTCTGTTTCTGTTGATGCTTCCAGGTTGCTGGGGGACGAAGTGTCTCAGAGCCCACTACTGGCTACATTTTACTTCCACCAGAAACCGAG  
TCACCCGGAGCAAAAGACCACTACGAAGGTTCAACGACCCCGCTGTTTCAAGAGTCTCGGTAATGACCGATGTAATAATGAAGGTGGTCTTTGGCTC

4010 4020 4030 4040 4050 4060 4070 4080 4090 4100  
CTGCTCAGATTTGCTCTCAGATGCGACTTGCCTCCCGGACAGTTCCGGGGTAGTGGGGGAGTGGGCGTGGGAAACCGGGAAACCCAAACCTGGTATC  
GAGCAGGTTTAAACGAGAGTCTACGCTGAACGGCGGGCGGTGCAAGGCCCACTACCCCTCACCAGCCCTTTGGGCTTTGGGCTTTGGACCATAG

4110 4120 4130 4140 4150 4160 4170 4180 4190 4200  
CAGTGGGGGGGTGGCCGGACGCGAGGAGTCCCCACCCCTCCCGGTAATGACCCCGCCCTTCTGCTAGTGTGTAGCGGCGCTCTCTTTCTGCGCTGA  
GTCAACCCCGCACCGGCTCGTCCCTCAGGGGTGGGGAGGGCCATTACTGGGGGGGGGTAAGCGATCACACATCGGCGGAGAGAAAGACGGGACT

4210 4220 4230 4240 4250 4260 4270 4280 4290 4300  
GTCTCAGGACCCCAAGAGAGTAAGCTGTGTTTCTTAGATCGCGCGGACCGCTACCCGGCAGGACTGAAAGCCAGACTGTGTCCCGCAGCCGGGATAA  
CAGGAGTCTGGGTTCTCTCATTCGACACAAAGGAATCTAGCGCGCTGGCGATGGGCGCTCTGACTTTCGGGTCTGACACAGGGCGCTCGGCTTAT

4310 4320 4330 4340 4350 4360 4370 4380 4390 4400  
CCTGGCTGACCCGATTCGCGGACACCGCTGACGCGCGGCTGGAGCCAGGGCGCGGCTGCCCCGCGCTCTCCCCGCTTCTGCTGCGGGGGCGGATAC  
GGACCGACTGGGCTAAGGCGCTGTGCGGACGTGCGCGCGGCTCGGCTCCCGCGGCAACGGGCGCGAGAGGGGCGAGACGCGACGCCCGCGGTATG

FIG. 5B



4410 4420 4430 4440 4450 4460 4470 4480  
CGCCTCTGTGACTTCTTTGCGGGCCAGGACGGAGAAGGAGTCTGTGCCTGAGAACTGGGCTCTGTGCCCCAGGAGGTGCAGATG  
GCGGAGACACTGAAGAAACGCCCGGTCCCTGCCTCTTCCTCAGACACGGACTCTTGACCCGAGACACGGGTCGGCTCCACGTCCTAC

FIG.5C

CGCCTCTGTGACTTCTTTGCGGGCCAGGACGGAGAAGGAGTCTGTGCCTGAGAACTGGGCTCTGTGCCCCAGGAGGTGCAGATG

<b>VEGF</b>	<b>VEGFR2</b>	<b>Tie2</b>
<b>Screening primers</b>	<b>Screening primers</b>	<b>Screening primers</b>
Primers: VF1-VR1A Product size: 0.69Kb	Primers: KF1-KR1 Product size: 0.45Kb	Primers: TF3-TR1 Product size: 0.45Kb
<b>PCR program</b>	<b>PCR program</b>	<b>PCR program</b>
Hot start	Hot start	Hot start
94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec	94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec
40 cycles	40 cycles	40 cycles
<b>Confirmation primers</b>	<b>Confirmation primers</b>	<b>Confirmation primers</b>
Primers: VF2-VR2 Product size: 0.98Kb	Primers: KF2-KR2 Product size: 0.58Kb	Primers: TF2-TR1 Product size: 0.47Kb
<b>PCR program</b>	<b>PCR program</b>	<b>PCR program</b>
Hot start	Hot start	Hot start
94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	94°C 40 sec 65°C 1 min 30 sec 72°C 1 min 30 sec	94°C 40 sec 58°C 1 min 30 sec 72°C 1 min 30 sec
40 cycles	40 cycles	40 cycles

**FIG. 6**

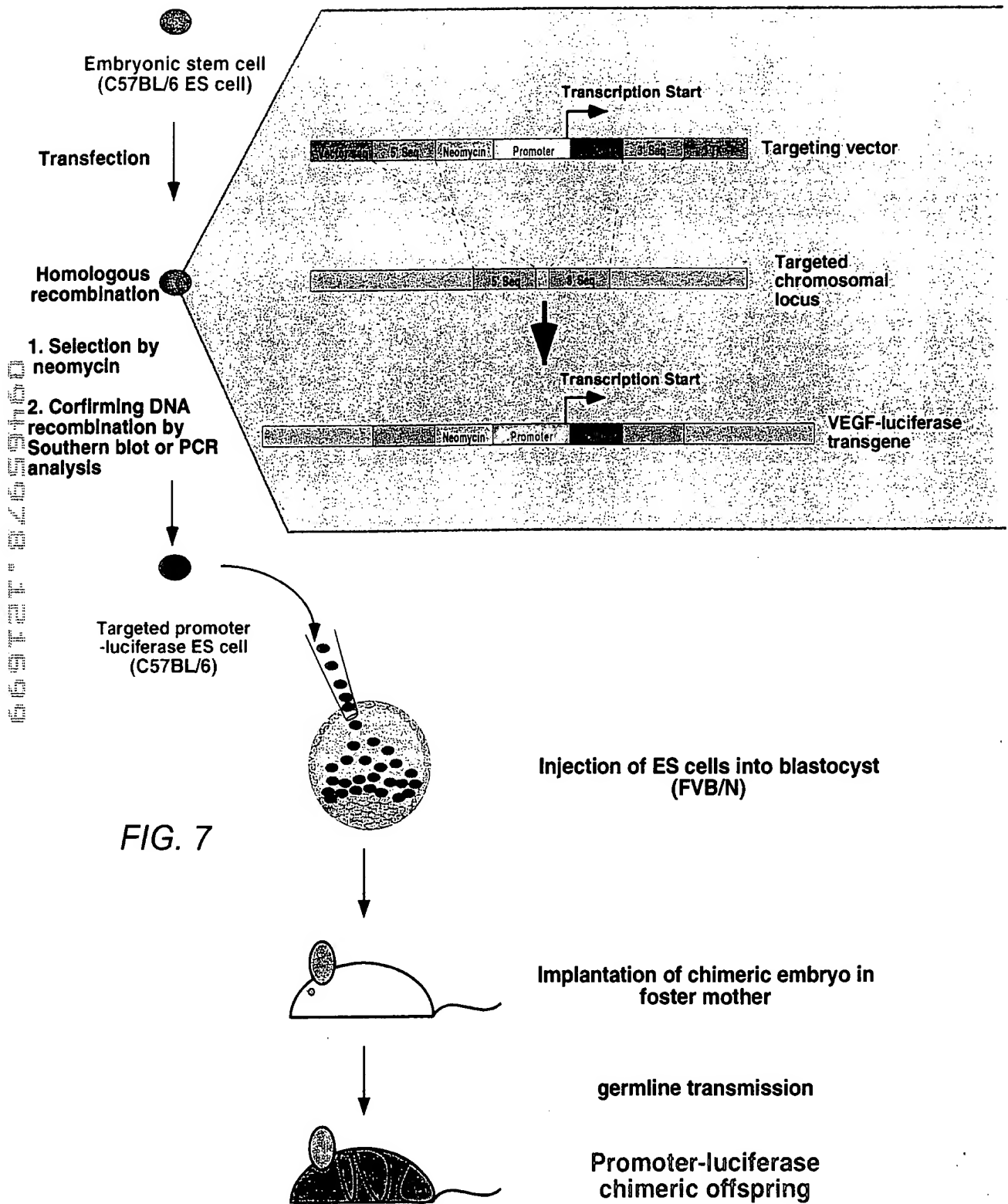


FIG. 7



SEQUENCE

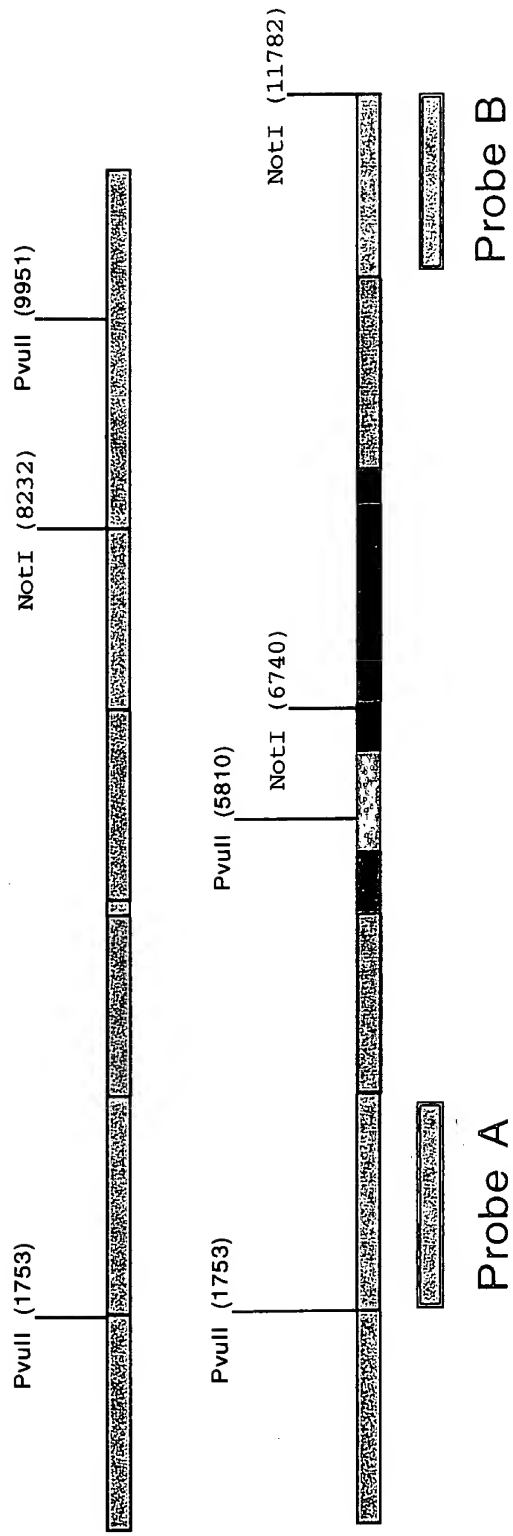


FIG. 8

# Generation of Targeted Transgenic Mice

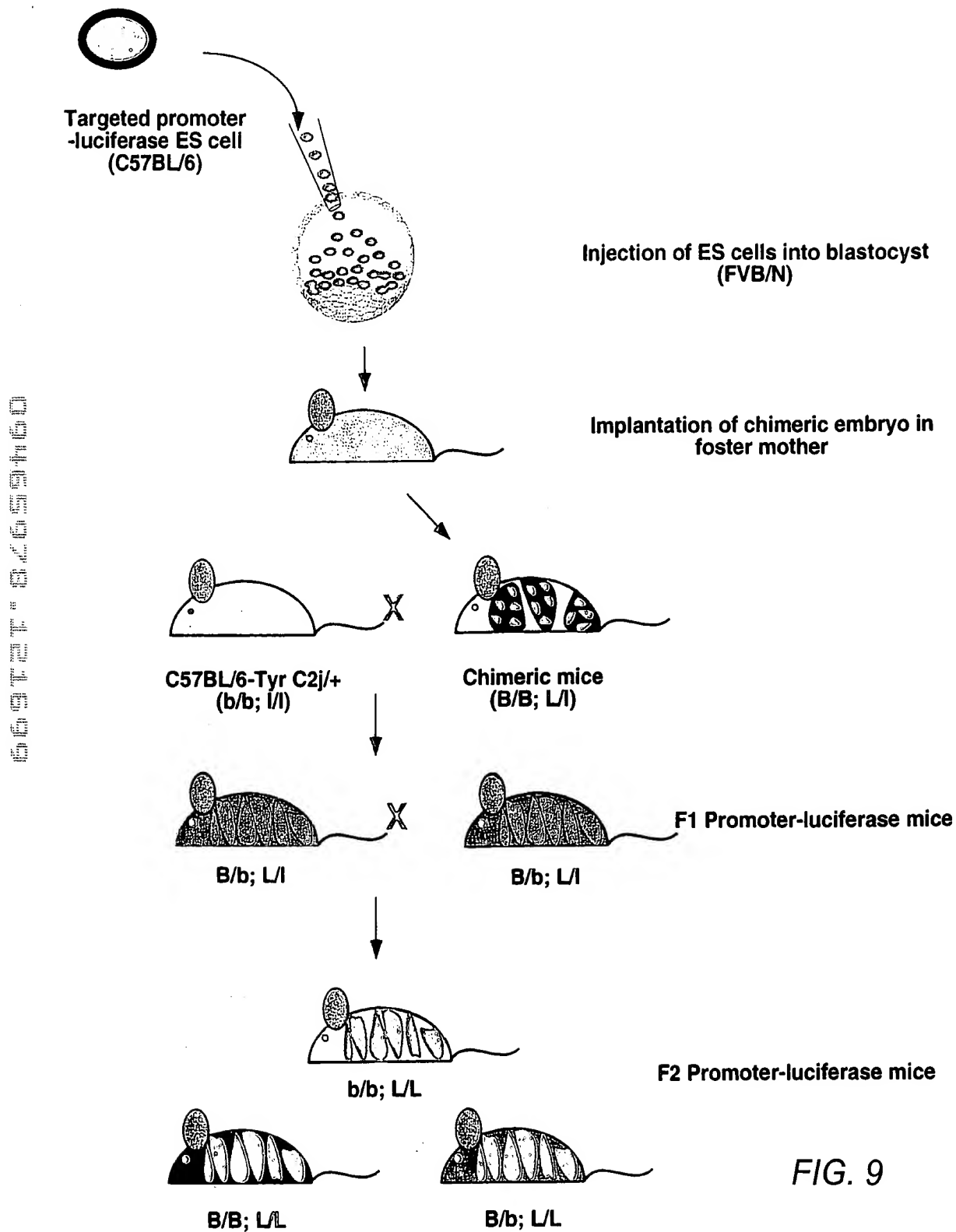
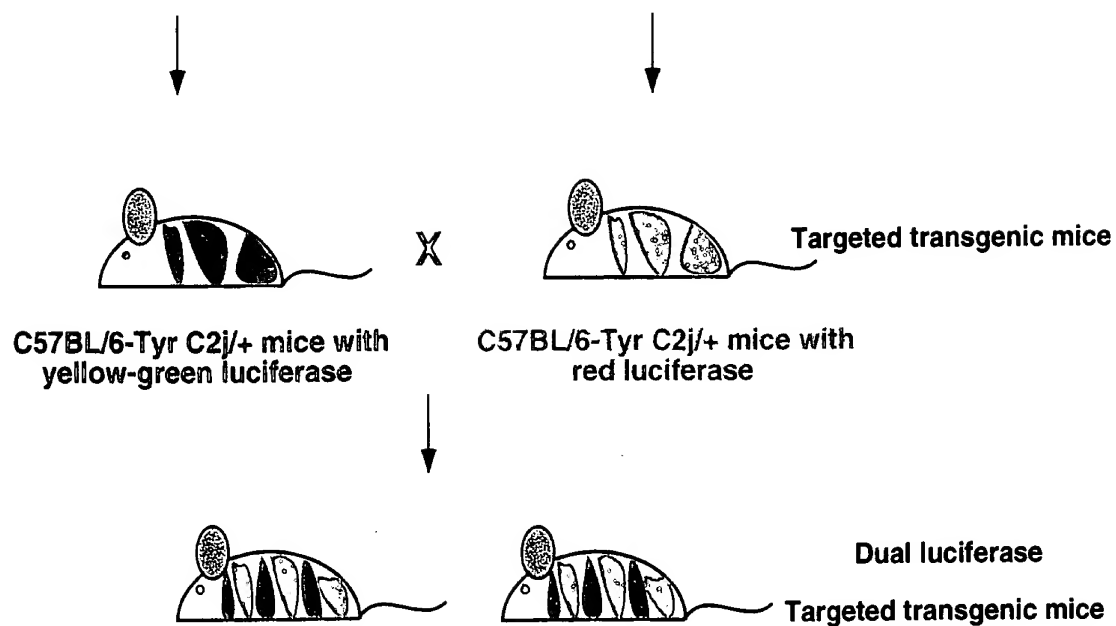


FIG. 9

009727 04659460

**pTKLG-Fos/VEGFR2  
targeted transgenic vector  
(Yellow-green luciferase)**

**pTKLR-Vn/VEGF  
targeted transgenic vector  
(Red luciferase)**



*FIG. 10*

10 20 30 40 50 60 70 80 90 100  
 AAATGTGCTGCTTTAGAAGCCACTGCCTCAGCTTCTGCAGCTCAGATACCAAAGGAAGTCTGGTACACAGCATGATAAAAGACAAATGGGACGGGGTCAC  
 TTTACACGACAGAAATCTTCGGTGACGGAGTCGAAGACGTCGAGTCTATGGTTTCCTTCAGACCATGTGTCGTACTATTTCTGTTACCCCTGCCCCAGTG  
 110 120 130 140 150 160 170 180 190 200  
 AGTGGCTCCCGTCCCTTTTCAGGGGTATGGAGACGAGCTGTAGAGAGATGTCTCCAGGGAGTTTTCATTAAATCAGCAATTTAGTCAGATCTGTGCATCCTA  
 TCACCAGGGCAGGGAAAGTCCCATACCTCTGCTCGACATCTCTCTACAGAGTCCCTCAAAGTAATTAGTCGTTAAATCAGTCTAGACACGTAGGAT  
 210 220 230 240 250 260 270 280 290 300  
 TGCTTTACAAGAAATGTCAGTGGGCTGAGATCATCAGATGGAGGTTTCATCGGGTTTCAATGTCCCGTATCCTTTTGTAAGACCTTGAAGTTGGCAACGC  
 ACGAAATGTTCTTTACAGTCACCCGGACTCTAGTAGTCTACCTCCAAGTAGCCCAAAGTTACAGGGCATAGGAAAACATTCTGGAACCTCAACCGTTGCG  
 310 320 330 340 350 360 370 380 390 400  
 AGGAAAACAGGAATCCACCTGGTGCCGTGAATTGCAGAGCTGTTGTGTTGGTTTGTGACCATCTGCCCATCTTCTCTGTTATGACAGAGCTTGTGAAC  
 TCTTTTGTCTTGAGGTGGGACACGGCACCTAACGTCTCGACAACACAACCAAACTGGTAGACGGGTAAGAAGACAATACTGTCTCGAACACTTG  
 410 420 430 440 450 460 470 480 490 500  
 TTAACTGGGACTGGGGCAAAGTCAATCCACCTTTATACAATGAATTGCTGAAGAGGCCTTTTAAACTTGGAGTGTGCATTGTTTATGGAAGGGCTTT  
 AAATTGACCCTGACCCCGTTTCAGTTAGGGTGGAATATGTTACTTAACGACTTCTCCGAAAATTTTGAACCTCACACGTAACAAATACCTTCCCGAAA  
 510  
 CCTATTGGATC  
 GGATAACCTAG

FIG. 11

009727-0269460

04659460

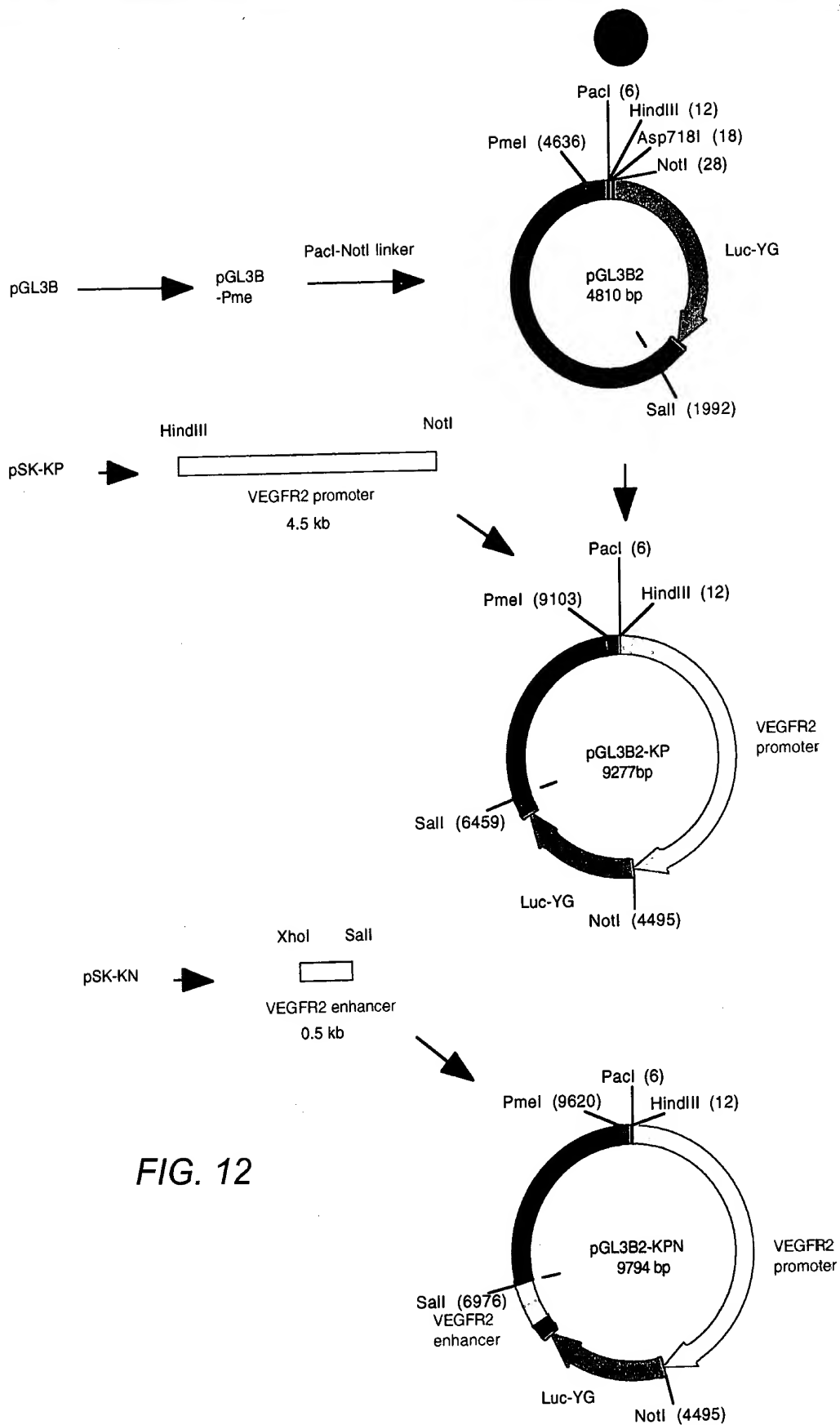


FIG. 12

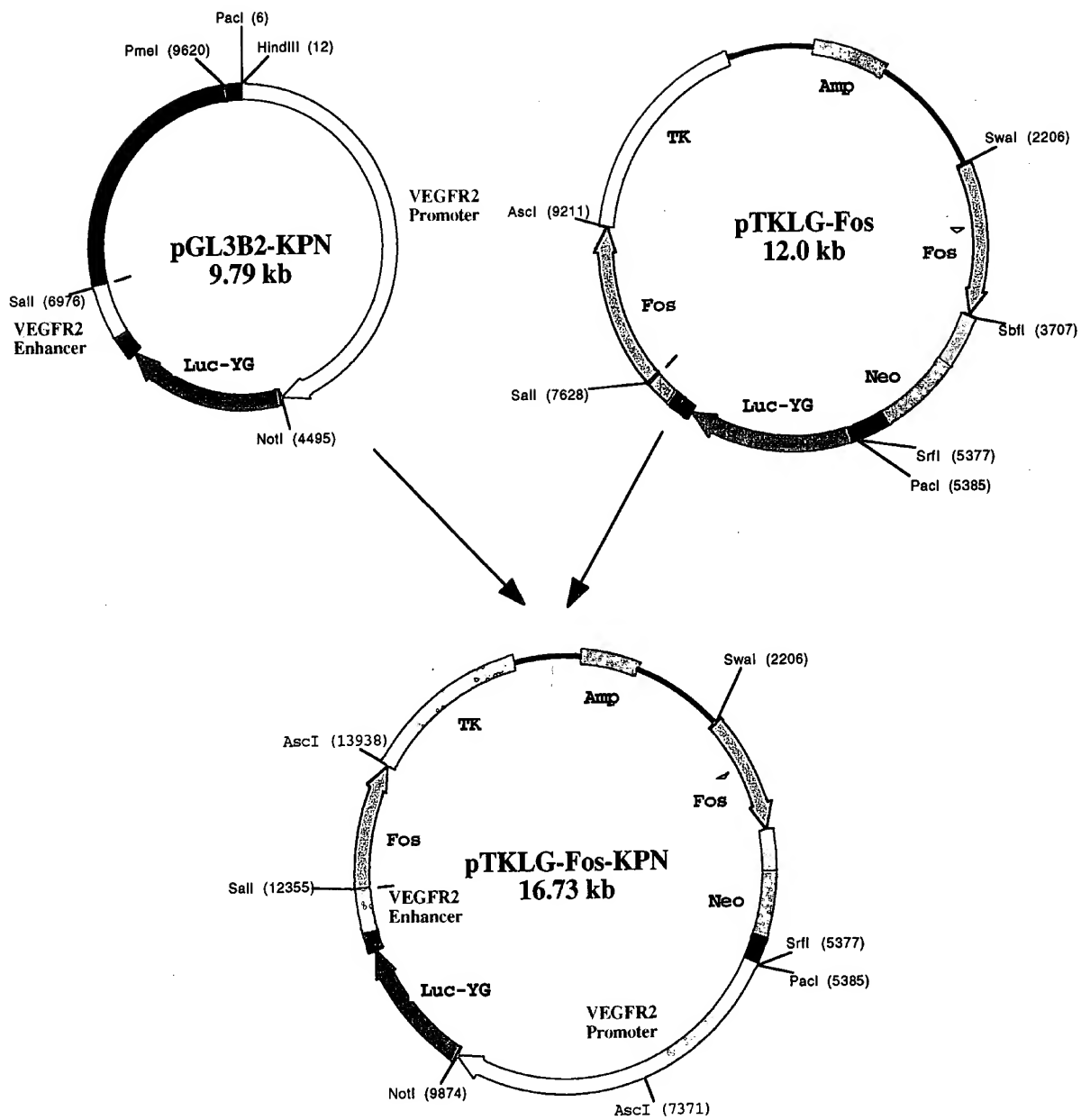


FIG. 13



[illegible]

FIG. 15-1



2210 2220 2230 2240 2250 2260 2270 2280 2290 2300  
AGGATCGTGGAAATGTGCCCATGATTAACCTTCAATTTATACCTGTAAGTTATACACATCCTAAACACGCTGATGTGCCAGAGAACTTTTGACCAGCT  
TCCTAGCACCTTACAGACGGGTACTAATTGAAGTTAAATATGGACATTCATATGGTGTAGGATTTGTGCGACTACAGGGTCTCTGTAAAACTGGTCTGA

2310 2320 2330 2340 2350 2360 2370 2380 2390 2400  
GCTAACAAAACCCAGGAGCATTTAGAAAAAACTGAGTCACCCACCGTTCTGGATAATGATGGAGAGAAACAAATGGGATTATTTCTACAGAGTATGAAA  
CGATTGTTTGGGTCTCTGTAATCTTTTGGTACTCAGTGGGTGGCAAGACCTATTACTACCTCTCTTGTATTACCTTAATAAGAAATGTCTCATACTTT

2410 2420 2430 2440 2450 2460 2470 2480 2490 2500  
GTTACATAAATTTCTGGATAATGGAGAAATTAATTAACATCAGCATCTTTCTGGACTGCAGAGGGAAGACAGAGGTGAAGCCAACTTTCCGGGAAAT  
CAATGTATTAAGGACCTATTACCTCTTAATTAATTTGTAGTCGTAGAAAAGACCTGACGTCTCCCTTCTGTCTCCACTTCGGTTAGAAAGGCCCTTTA

2510 2520 2530 2540 2550 2560 2570 2580 2590 2600  
GGAGGAGAAAGAAATTTGACTACTATTGGGGTTAAACAATACATCTTACTAGCATGGCAAGGAACTGGGCTGCTTTTCAGAGTAAGCCACCCAGTA  
CCTCTCTCTTTCTTAACTGATGATAAACCCCAATTTGTTATGTAGAATGATCGTACCGTTTCTTTGACCCGACGAAAAGTCTCATTCGGTGGGTCTAT

2610 2620 2630 2640 2650 2660 2670 2680 2690 2700  
GATGCTGCAAGGCTGTGCTTTTCATCCAGGAGAAAGTCAACAGGGCCAGGCATGCCAGAACATGCCATAATGTAACCACTTAGGCTGAGGCAGAAAGAT  
CTACGACGTTCCGACACGAAAGTAGGGTCTCTTTCAGTTGTCCCGTCCGTACCGTCTTGTAACGGTATTACATTTGGTGAATCCGACTCCGCTTTCTA

2710 2720 2730 2740 2750 2760 2770 2780 2790 2800  
CAAAAATCCAGGCGAGCTTAGTTTGTGTAACAAGACCTTTGCTCAAAACAAGATTACAAAACAAGCAAAACAAATATAAAAAAGGAGAGA  
GTTTTTAGGGTCGGTCGAATCAACACATTTGTTCTGGAACGAGTTTGTCTTAAATGTTTGTGTTGTTGTTTATATTTTTCTCTCTCT

2810 2820 2830 2840 2850 2860 2870 2880 2890 2900  
AAATAACGTCCAGGGAGGCTGTGAGCAATGAAGACTTTGATGAGTGACCATCTCGCACAGTGGACGCTTGTGTCTAGAAGGTAAGGGCTTGGCAATGTTT  
TTTATTGACGGTCCCTCCGACACTCGTTACTTCTGAACACTACTGCTGAGAGCGTGTACCTGCGAACACAGATCTTCCATTCCCGAACCGTTACAAA

2910 2920 2930 2940 2950 2960 2970 2980 2990 3000  
CCCAGGTTTCCATTCTCGTTTATATGCTTGGGTCAGGCGAGTGGACTTCAATGCTCAGCTTCCAGGCTTTTATACAGAGCATATTAGCCACATGTGGT  
GGGTCCAAAAGGTAAGGACCAATATACCGAATCCGGTCACTGAAGTGTACAGAGTCGAAGGTCCAGAAATATGTCTCGTATAATCCGGTGACACCA

3010 3020 3030 3040 3050 3060 3070 3080 3090 3100  
AGCTTGTGCTGTAAATGCTGGCACTTGAGAGACCAAGACAGGAGGATTGCCACAAGTCTCCATCCAGCCTAGGTGCTGTGCTCACTCTGTCTCACCCTGA  
TCGAACACGGACATTACGACCGTGAACCTCTCGGTTCTGCTCCCTAACCGTGTTCAGAGGTAGGTCCGATCCACGACACAGTGAGACAGTGGGGACT

3110 3120 3130 3140 3150 3160 3170 3180 3190 3200  
CCCAGTCCCAACCAATCAACAGGCTATCACTGTGACACTGGTACTGAGTCAGAAATCAACCCAGATTAAAGATTCTGGGAGATCACTCTCGGGATGCG  
GGGTGAGGTTGGTGTAGTTTGTCCGATAGTGACACTGTGACCATGACTCAGTCTTAGTGGTCTAATTTCTAAGACCTCTAGTCAGGACCCCTACGC

3210 3220 3230 3240 3250 3260 3270 3280 3290 3300  
GGAAGTGAGACCGATTATTAATAATCTTATATCTATGAGATGATGGATCCAGATGAGAAATGTAAAAATTTAGGTTTATATTTAGAGAAATAGGT  
CCTTCACTCTGGTCAATAAATATTAAGAAATAGTACTTACTACTACCTAGGTCTACTCTTTAACATTTTAAAAATCCAAAATATTAACTCTTTATCCA

3310 3320 3330 3340 3350 3360 3370 3380 3390 3400  
GGTTTCTCAGGTTACATCTCTCCACTGTTGGTCAATTTCAAGTCAAGTCACTCCCATTTGATTCTCTGTGAGGCTCTCACATCCAGGCTCTCTGGGACTTT  
CCAAAGAGTCCCAATGATGAGAGGTGACCAACAGTAAAGTCGATTCCAGTGAGGGTAACTAAGGACACTCCGAGATGTAGGTTCCAGAGACCCGTA

3410 3420 3430 3440 3450 3460 3470 3480 3490 3500  
CTAGAGTTTCCCGCTGCTCCAGCCCTGAAAATGCGTATTTCTATTCTATCTCCTGGCATTTCTGGGCTTCTCTCTGCTCCCGCCGCCCAACCACT  
GATCTCCAAAGGCGACGAAGGTCGGGACTTTTACGATAAAGATAAGTAAAGAGACCGTAAGACCCGAAGAGAGACAGGGGGGGGGTGGTGTGGA

3510 3520 3530 3540 3550 3560 3570 3580 3590 3600  
GATCTGCCCCCTTCTCTCCCCCTCTCTCTTAACCAAGGTCCTCCCTCCCTCTGCTTCCCATGATTATTTTGTTCCTCTCTAAATGAGTCTGAA  
CTAGGACGGGGAAAGAGAGGGGGAAGAGAGATTTGGTCCAGGAGAGGAGGAGACGAAGGTTACTAATAAAAAGAGGAGAGATTTACTCAGACTT

3610 3620 3630 3640 3650 3660 3670 3680 3690 3700  
GCATCTCACTTGGACNTTCTCTCTGTTAACTTCAATGCTGTGAGTTGTATCATGGTATTCTGTACTTTTGTGCTAATGTTTCACTTATCAGT  
CGTAGGAGTGAACTGNAAGGAAGAACATTTGAAGTATACAGACACTCAACATAGTACCCATAAGACATGAAAAACCGATTACAAAGTGAATAGTCA

3710 3720 3730 3740 3750 3760 3770 3780 3790 3800  
GAGTGCAAAACAGGCATATCCTTTTGAAGTTGGGTTACCTCACTCAGGATGATATTTCTAGTTCTATCCATTGCGCTGCAAAATTCATGATGCTCTAAT  
CTCAGCTTTGGTCCGTATAGGAAAATCAAAACCAATGGAGTGAGTCTACTATAAAGATCAAGATAGGTAAGCGGACGTTTAACTACTACAGGATTA

3810 3820 3830 3840 3850 3860 3870 3880 3890 3900  
TTTTAGTAGCTGAATAGTATTCCATTGTGTAAATGAACCATATTTCTGCACTGTTCTTCACTGAGGAAATCTGGGTTGTTTCCAGCTCTAGGTAT  
AAATCATCGACTTATCATAAGGTAACACATTTACTTGGTATAAAGACGTAGACAAGAAAGTCACTCCCTTAGACCCCAAGAGTCAAGATCCATA

3910 3920 3930 3940 3950 3960 3970 3980 3990 4000  
TATAAATAAGGTTGCTATGAACATAGTGAACACATATCCTTGAGGTATGGTAGACATCTTTTGGGTATATATCCAGGAGTGAATAGTTGGGTTTTCAG  
ATATTTATTTCAACGATCTTGTATCACCTTGTGTATAGGAACCTCATACATCTCGTAGAAAAACCATATATAGGTCCTCACCTATCAACCCAAAGTC

4010 4020 4030 4040 4050 4060 4070 4080 4090 4100  
GTAGAACTATTTCCAATTTTCAAGGAACCAACAGATTTGATTTTATAGATAGACAGGGCCCTAGTGGAGAGATGGGGCCAAACACCTACCTTCAAAAAT  
CATCTGTATAAAGTTAAAGATTCTTGGTGGTCTAACTAAATAATCTATCTGCTCCCGGGTACCTCTCTATCCCGGTTTGTGGATGGAAGTTTAA

4110 4120 4130 4140 4150 4160 4170 4180 4190 4200  
TGTGTCAGAAATTTGCTCTTAAAGAAATGCAGGACAAAAATGAAACAGAGACTGACCAACCACTTAGGATCCATCTATGGGCAAGCAACCAAC  
ACCAGGCTTAAACAGGAGAGATTTCTTTACGTCCCTGTTTTACTTTGTCTGACTGGTTGGTTGAATCCTAGGTAGGATACCCGTTCTGTTG

4210 4220 4230 4240 4250 4260 4270 4280 4290 4300  
CCAGACTCTATTATGATGCCATGTTGTCTTGAGACAGGAGCTTAGCATGGCTGCTCTGAGACACTCTATCAGCAGCTGACTGGGACAGATGACAGA  
GGTCTGAGATAATAACTACGGTACAACACGAACGTCTGTCTCGAATCGTACCGACAGGAGACTGTGAGATAGTGTGCTGACCTGCTCTACGCT

4310 4320 4330 4340 4350 4360 4370 4380 4390 4400  
TGCCAAACCTTGAAGTGAAGTCCAGGACCCCTATGGAAGAAATAGGGGAAGGTTGAAGGAGCTGAAGGGATGGCAACCCATAGGAAAAACAAGTGT  
ACGGTTGGGAATTTGACTCCAGGTCCCTGGGGATACCTTTCTAATCCCTTCCAACTTCTCGACTTCCCTACCGTTGGGGATACCTTTTGTTCACAG

FIG. 15-2

[illegible]

FIG. 15-3

6610 6620 6630 6640 6650 6660 6670 6680 6690 6700  
 GGCTGGTCCATCGCATACCATACATAGGTGGAGGGCTTGTATTCAATTCCTGGCCTATGAGAGGATACCCCTATTGTTCCGAAAAATGCTGACCAGG  
 CCACCAGGAGTAGCGTATGGTATGTATCCACCTCCCGAACAAATAAGTTAAGGACCGGATACCTCTCTATGGGGATAACAAGGACTTTACGACTGGTCC  
  
 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800  
 ACCTTACTTGTAAACAAAGATCCCTCTGCCCCACAATCCAGTTAAGGCAGGAGCAGGAGCCGAGCAGGAGCAGAAGATAAGCCCTGGATGAAGGGCAAGA  
 TGGAAATGAACATTGTTTCTAGGAGACGGGGTGTAGGTCAATTCCTCCTCGTCCGCGCTCGTCTCTTCTATTTCGGAACCTACTTCCCGTTCT  
  
 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900  
 TGGATAGGGCTCGCTCTGCCCCAAGCCCTGCTGATACCAAGTGCCTTTAAGATACAGCCTTTCCCATCCTAATCTGCAAAGGAAACAGGAAAAAGGAACT  
 ACCTATCCCGAGCGAGACGGGGTTCGGGACGACTATGGTTACGGAATTTCTATGTCGAAAGGGTAGGATTAGACGTTTCCTTTTCTCCTTGA  
  
 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000  
 TAACCTCCCTGTGCTCAGACAGAAATGAGACTGTTACCGCCTGCTTCTGTGGTGTTCCTCTGCGCCAACTTGTAACAAGAGCGAGTGGACCATGC  
 ATTGGGAGGGACACGAGTCTGTCTTTACTCTGACAAATGGCGGACGAAGACACCACAAAGAGGAACGGCGGTGAACATTTGTTCTCGCTCACTGGTACG  
  
 7010 7020 7030 7040 7050 7060 7070 7080 7090  
 GAGCGGGAAGTCGCAAGTTGTGAGTTGTTGAAAGCTTCCAGGGAATCATGCTCATCTGTGGACGCTGGATGGGGAGATCTGGGGAAGTATG  
 CTCGCCCTTCAGCGTTTCAACACTCAACAACTTTCGAAGGGTCCCTGAGTACGAGTAGACACCTGCGACCTACCCCTCTAGACCCCTTCATAC

FIG. 15-4

0946597.27.8/659460

Variable	Mean	SD	Min	Max
Age	34.5	10.2	22	55
Gender	Male	Female		
Marital status	Married	Single		
Education	High school	College		
Occupation	Manager	Worker		
Income	Low	High		
Health status	Good	Poor		
Smoking status	Smoker	Non-smoker		
Alcohol consumption	Regular	Occasional		
Exercise frequency	High	Low		
Stress level	High	Low		
Sleep quality	Good	Poor		
Dietary habits	Healthy	Unhealthy		
Family size	Small	Large		
Religious beliefs	Religious	Secular		
Political views	Conservative	Liberal		
Travel frequency	High	Low		
Pet ownership	Yes	No		
Home ownership	Owner	Renter		
Car ownership	Yes	No		
Internet usage	High	Low		
Mobile phone usage	High	Low		
Video game usage	High	Low		
Reading frequency	High	Low		
Music listening frequency	High	Low		
Golfing frequency	High	Low		
Fishing frequency	High	Low		
Gardening frequency	High	Low		
Volunteering frequency	High	Low		
Charitable donations	High	Low		
Political participation	High	Low		
Community involvement	High	Low		
Neighborhood satisfaction	High	Low		
City satisfaction	High	Low		
Country satisfaction	High	Low		
World satisfaction	High	Low		
Life satisfaction	High	Low		
Overall happiness	High	Low		

FIG. 16

044597-169  
66972-8459460

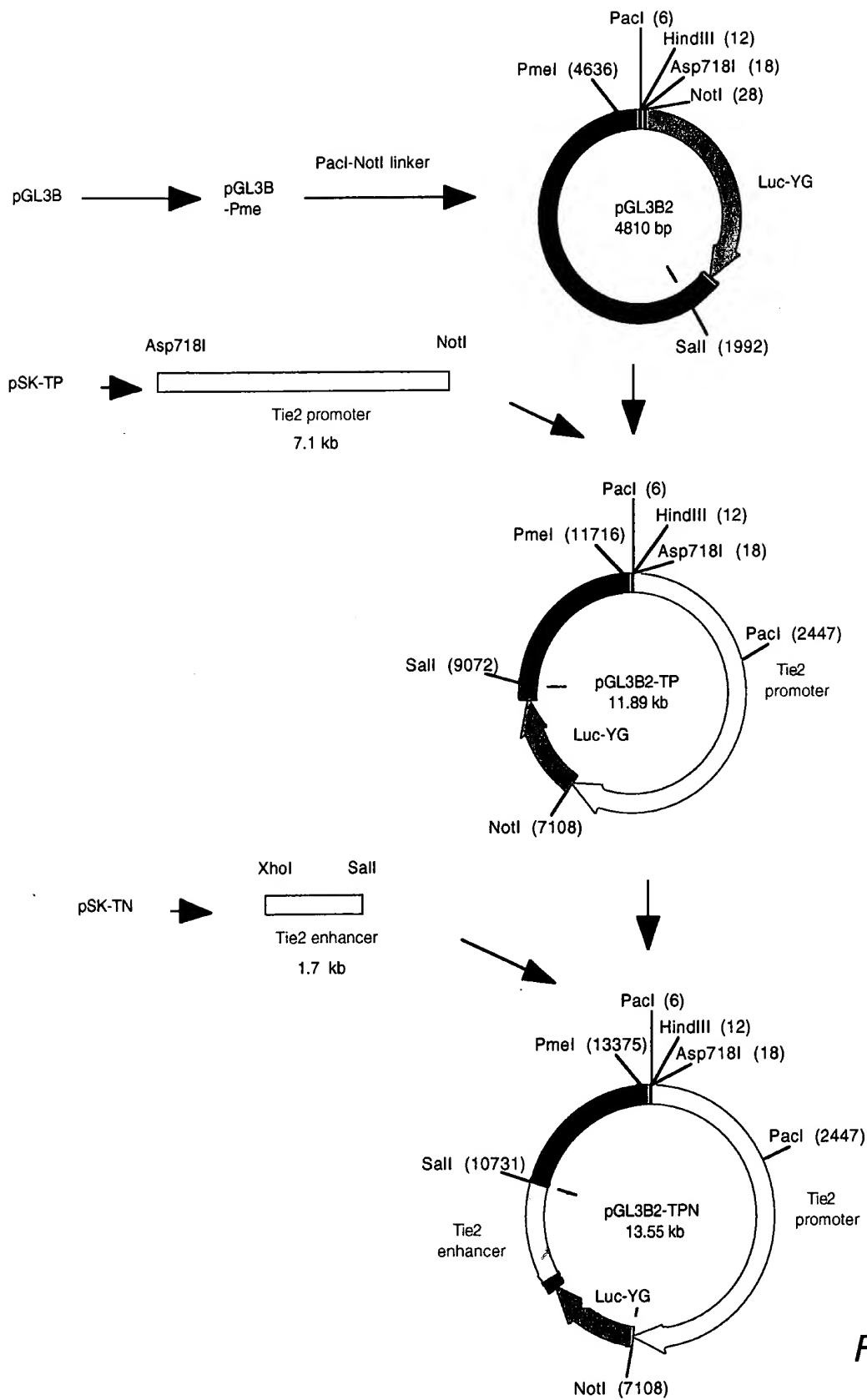


FIG. 17

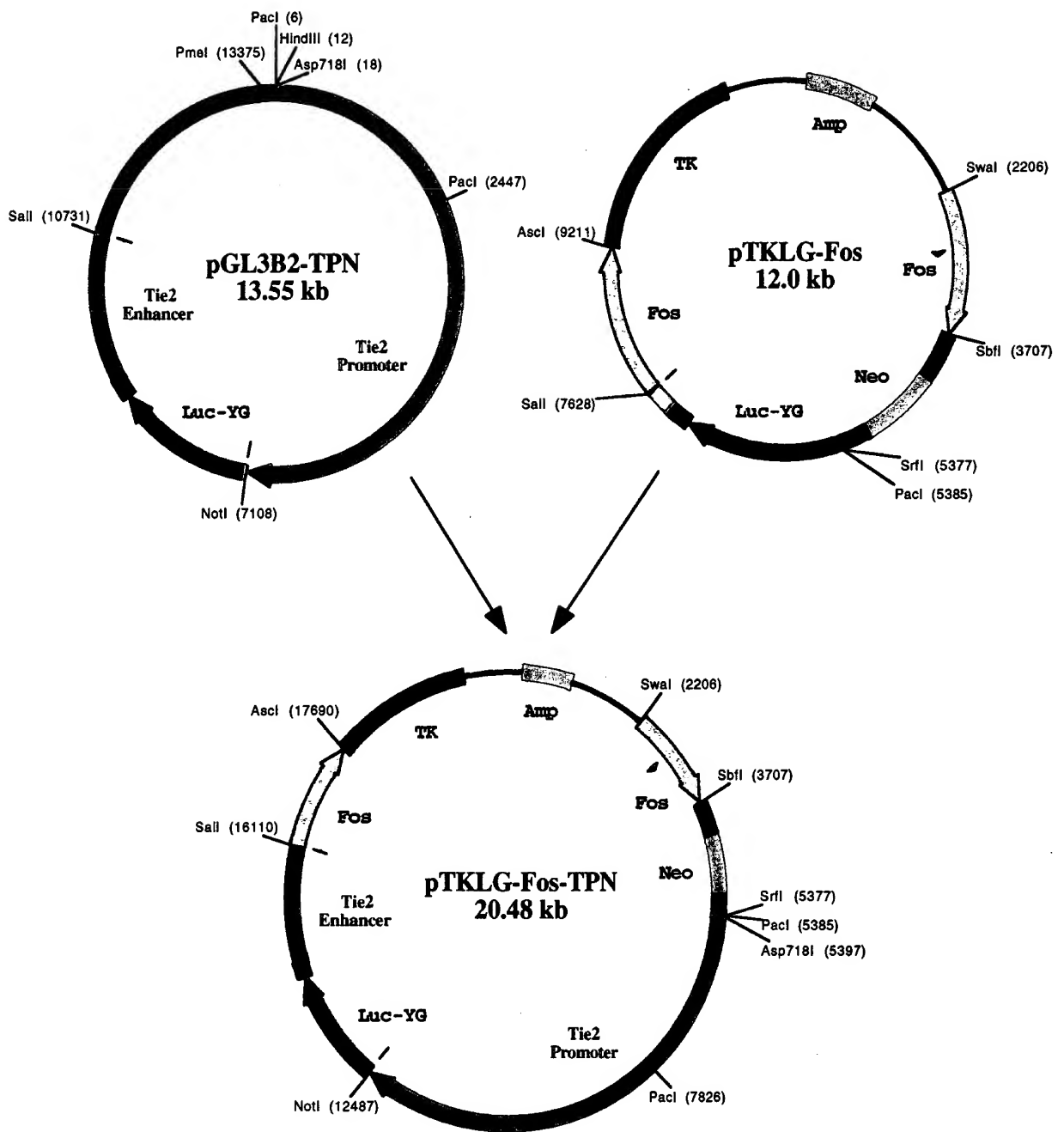


FIG. 18

669127-8/659460

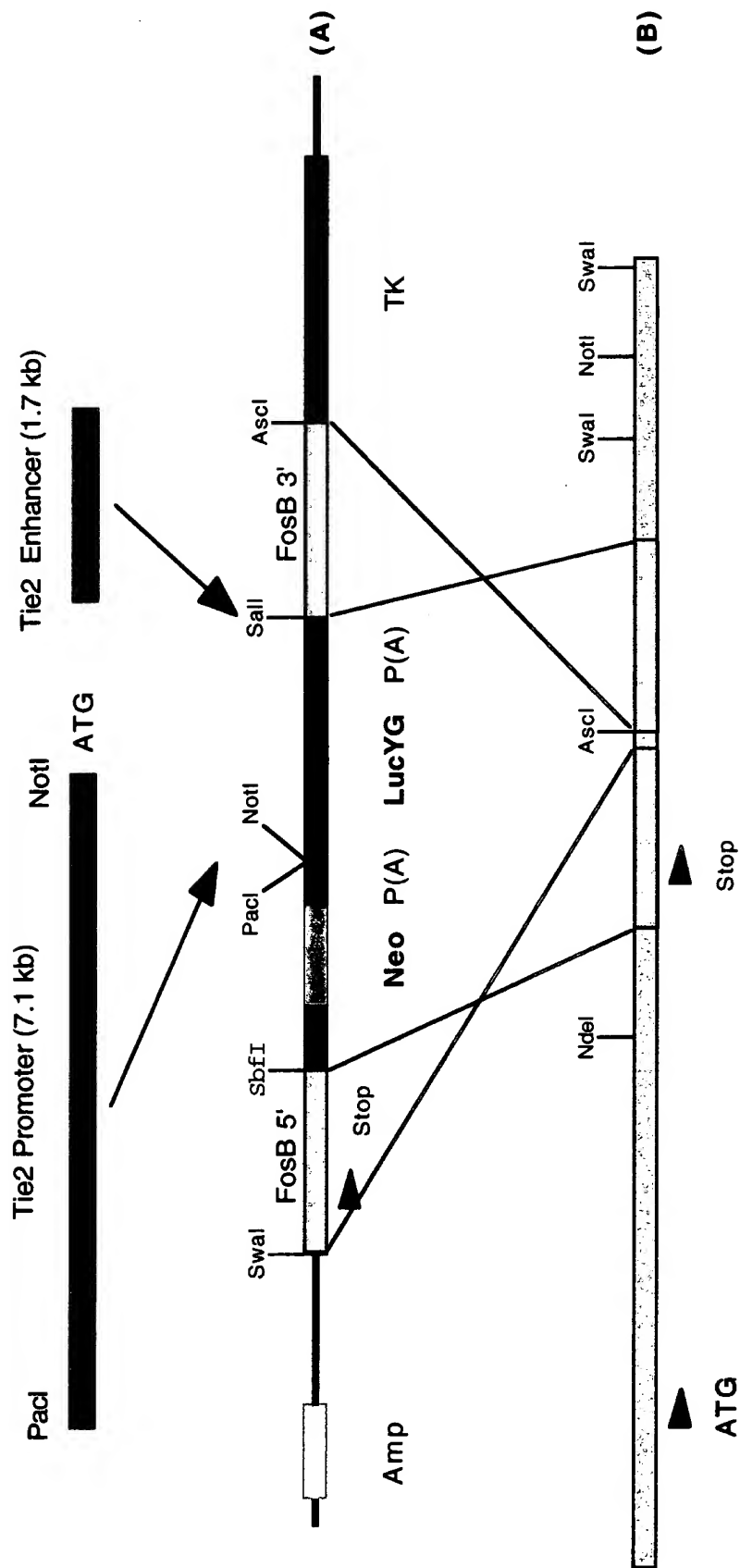


FIG. 19